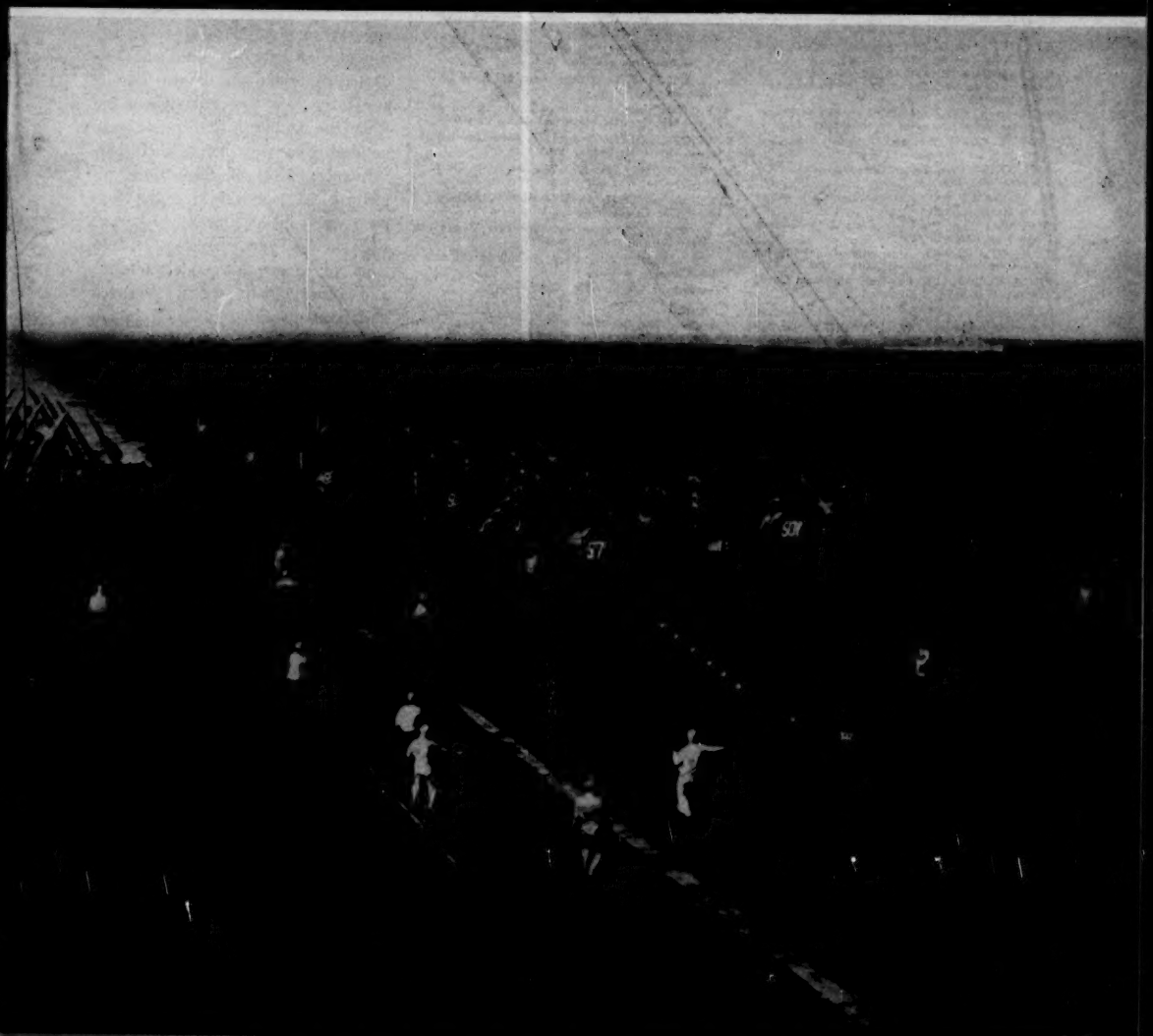
Standardization

News Magazine of the American Standards Association, Incorporated



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SEPTEMBER
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Company Members—More than 2000 companies hold membership either directly or by group arrangement through their respective trade associations.

Marginal Notes

Standards on Television—

As far as we know, the discussion of rayon standards on the Kathi Norris show (page 276) is the first appearance of standardization on any commercial television station. Understandably enough, the two women and three men who represented the American Standards Association were noticeably nervous before their performance. Most of them were appearing on television for the first time—and in an unrehearsed, "ad lib" show. They were not too sure what to expect, although questions and answers and general approach had been discussed carefully in advance.

As Kathi Norris led the way with questions carefully calculated to represent the doubts and worries of the homemaker listening to the program, they rose to the occasion and convincingly presented the story of rayon standards. The exhibits furnished by the National Institute of Cleaners and Dyers added drama to the serious discussion.

All agreed that this first television documentary on standards had chalked up a substantial success.

The proposed American Standard Specifications and Methods of Test for Rayon Fabrics, L22, which were the subject of the television show, have been submitted to the National Retail Dry Goods Association as sponsor by the chairmen of the sectional committee. They are now in process, being considered for submittal to the American Standards Association.

On the International Scene—

A Report From France (Page 273) includes a history of the French Standards agency, AFNOR. It is a full discussion of how French standards are made and applied. The article indicates clearly the trend for standardization in France and gives statistics for the past ten years.

However, all is not too smooth in France, as the news brief (page 292)

about *Life's* article; "Headache: Standardization" points out.

Progress has been made, however, on the standardization of aircraft bombs and release equipment for use by British and American forces. As early as 1941, an inter-service committee was established to standardize aviation ordnance. Even in 1936, a need for standardizing US Army and Navy ordnance was recognized, and efforts, on a small scale, were made to that purpose. In his article, Some Adventures in Military Standardization (page 277), Rear Admiral M. F. Schoeffel relates his experiences with these committees.

The results of standardization in industry are well presented in IH Cashes In (page 269). How standards were introduced, how they are applied, what they have saved the company in time, dollars and convenience, makes a story of true ingenuity in business.

Our Front Cover

The flight deck of the USS Princeton is an excellent example of Standardization. The planes themselves, lined up for take-off, are standard and made up of standard parts—from the tiniest nuts and bolts to the powerful propellers. Laden with bombs, made to standard specifications, the sky-raiders are directed into position by the nimble-footed flight deck crew.

These men, using standard directional signals, lead the planes from station to station toward the launching spot. Long before planes and bombs reached the deck of this carrier, men were hard at work to determine the standards to be met in their construction. How they did it is discussed by Rear Admiral M. F. Schoeffel, U. S. Navy, Chief of the Bureau of Ordnance, Navy Department, in his article, Some Adventures in Military Standardization, Page 277.

Our cover is an Official U.S. Navy Photo

Opinions expressed by authors in STANDARDIZATION *are not necessarily those of the American Standards Association.*

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Standardization is dynamic, not static. It means not to stand still, but to move forward together.

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ASA

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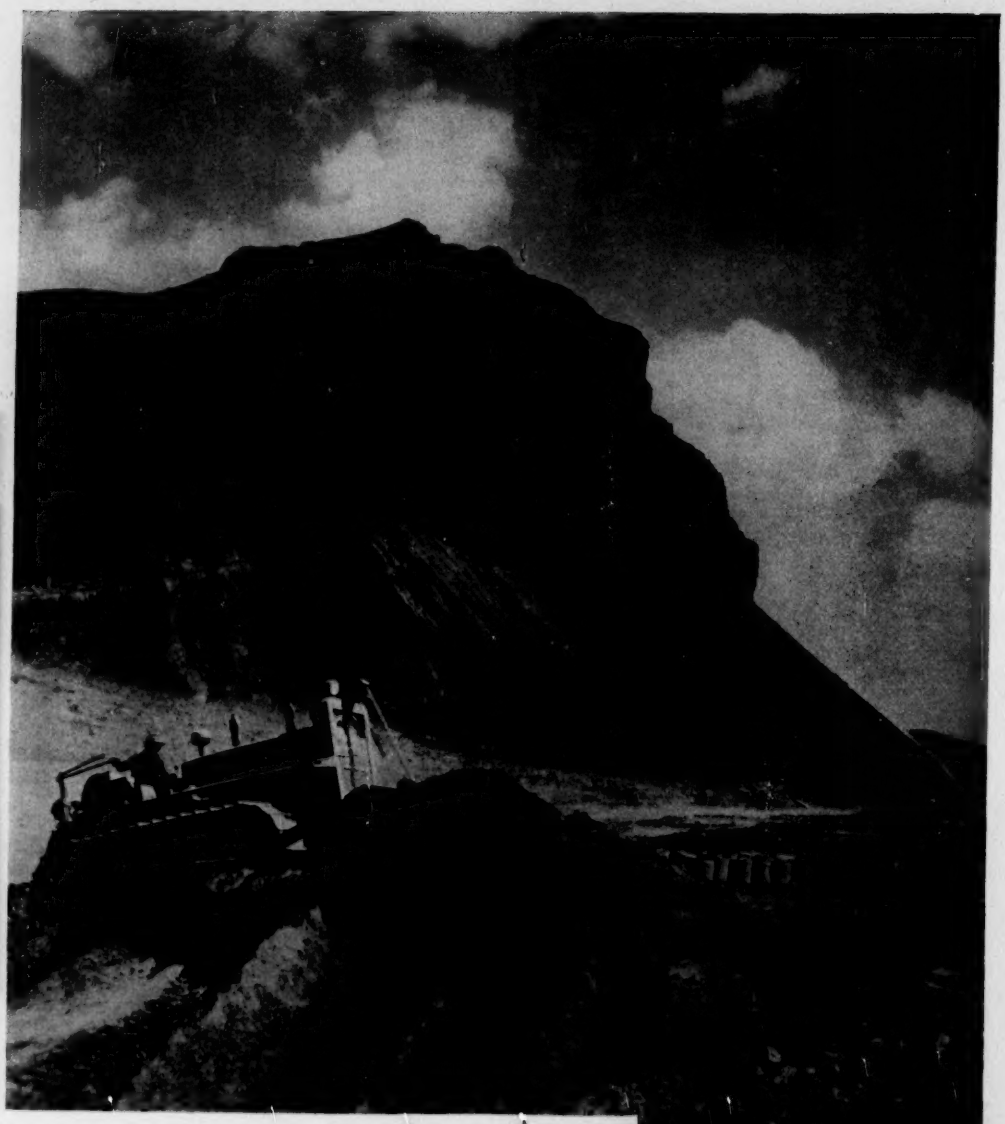


International Harvester

The rugged beauty and strength of America meet the vanguard of civilization.

Once upon a time, it took men long and weary hours of labor to construct roadways—the door through which men and women pour, towns and cities spring up, farms and industries develop.

Man's genius led him to devise methods and mechanics to eliminate such back-breaking labor: to allow him more freedom to enjoy the marvels of the earth and his own handiwork.

IH Cashes In

INTERNATIONAL HARVESTER is one of the many companies in the United States that is now cashing in on its standardization program. The methods it has devised for smooth operation between plants under normal conditions are paying off now that scarce materials and government regulations are giving management its all-time production headache.

IH is truly, as well as in name, an international company. It has some 24 manufacturing plants in the United States; in addition, it has 14 plants in other countries—Cuba, France, England, Australia, The Philippines, Germany, Sweden, Mexico, and Canada. Each plant has its own management, but each has the advantage of the operations of the whole organization.

International Harvester was originally a manufacturer of farm implements, but at present the IH line is much more diversified. The company is composed of seven major divisions on the basis of product manufactured; these are, the Motor Truck Division, Farm Tractor Division, Industrial Power Division, Farm Implement Division, Refrigeration Division, Steel Division, and the Fiber and Twine Division. IH is in the vanguard of producers of heavy duty trucks, farm and industrial tractors, as well as farm implements, and is making rapid strides in the refrigeration industry. Standardization forms an important part in the smooth interaction of the seven Divisions.

Manufacturing standards and engineering standards are two important areas in the company's operations.

"Manufacturing standards," as the name implies, outline the standard methods, techniques, processes, equipment, and supplementary materials such as cutting fluids, cleaning compounds, and the like that are considered most efficient in manufacturing the company's products. "Engineering standards" are those that are used in designing the product, in specifying the material to be used in the product, and in determining how the product shall operate when it has been manufactured. "Engineering standards" also provide for interchangeability of the parts used in the product.

"The product" in peacetime may be twine; it may be household refrigerators; it may be a farm harrow; or a track-laying type tractor, or a motor truck. Each necessarily requires some variation in technique. Each, however, has certain similarities. A motor truck uses screws and bolts that are much the same as the screws and bolts used in a tractor. The twist drills used in one plant are the same as those used in another. The steel used in the refrigerator plant will react to corrosion in the same way as the steel in the farm implements plant.

To find the similarities in the manufacturing problems of the plants making these various products and to provide a standard method of solving them is the job of the Standards Section of International Harvester's Manufacturing Research Department.

This department was organized after World War II, in 1946, and has been in active operation only since 1947. It works cooperatively with the management of the various plants to help them increase their output, improve the quality of the product, improve working conditions, and reduce costs.

The head of the Manufacturing Standards Research Section is P. L. Houser, well known in American Standards Association circles as an active member of the Company Member Conference and as secretary, now chairman, of Committee B5 on Small Tools and Machine Tool Elements.

Tools are Mr Houser's specialty. His first major job in IH's Chicago headquarters was as head of a tool standardization program. It was through his work on this program that he became active in Sectional Committee B5 and first became secretary of that committee. Even during the war when he was an Army Colonel, this committee's work was considered so important that he continued his activity with it. It dovetailed closely with his Army job. His Army responsibility was production of cutting tools, gages, machine tools, and similar equipment. Part of his job was to see that the coun-

International Harvester

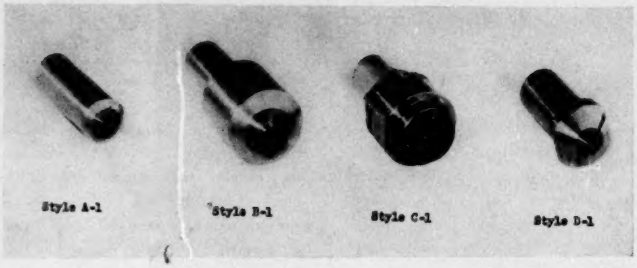
The piles of sliver, treated with oil, insect and rodent repellants, and fungicide, must conform to specified weight before processing into twine. The fibre is spliced before entering the set machine by the man in background.

try's productive capacity for such tools was used most effectively and to increase it wherever possible.

Mr Houser's present job at IH was a natural outgrowth of his activities on behalf of tool standardization. When released from the service, he was assigned by the company to set up the Manufacturing Standards Research Section to carry the techniques of tool standardization into a broader field. When he took over this responsibility there was no IH manufacturing standard other than those for tools.

The Manufacturing Standards Book prepared by this Section now includes standards on Forging, Mechanical Engineering, and Welding. Plans for the future call for standards related to foundry operations, inspection, materials handling, metallurgical engineering, plant engineering, product protection, (including painting, packaging, and rust prevention). Additional forging standards will, it is planned, result in interchangeability of die sets from one plant to another. It will mean that any plant can be called upon to furnish tools used in forging to another plant without the necessity of delay for changes to meet differing plant requirements.

One of the outstanding accomplishments of the Section to date has been designation of a standard way of conducting trial tests of perishable tools and abrasives at all plants so that tests made at one plant can be used by any other plant. When a plant makes a test, results are reported on a Test Report Summary. This standard form is sent to the Manufacturing Research Department, duplicated, and circulated to the other plants for their information.



International Harvester

The four standard types of Diamond Dressing tools now used by IH.

The company's standard for diamond dressing tools is only one example where reduction of the number of different sizes has simplified the company's procurement and storage problem and facilitated exchange of tools between plants. This standard reduced the number of sizes from 100 to only 4.

International Harvester is a believer in the use of standards agreed upon on a nationwide basis. Through selection of various styles and sizes of single-point tools from American Standard B5.22-1950, 359 different blueprints formerly used by the company for such tools were cut to 37.

The Section follows a policy of bringing to the attention of each of the manufacturing plants American Standards, such as the one on single-point tools, that it believes can be efficiently used within the company.

"One of the ways we have of keeping abreast of what is going on in the country is active participation in national committees, such as ASA sectional committees and committees of technical societies and trade association," Mr Houser comments. "This cooperation brings us closer to the heart of American industry and to what is going on throughout the country."

With some 315 people, the Manufacturing Research Division holds 97 active memberships in various national societies. Thus, the experience of these national groups is brought into the work of the company, and on the other hand, the experience of the company is carried to the work of technical committees.

"This interchange of experience is an important element in the development of industrial America," Mr Houser declares.

International Harvester

Not only does IH supply farmers with tractors, plows and other heavy duty machinery, but also produces a line of refrigerating equipment. Refrigerators, freezers and milk coolers are manufactured by the Refrigeration Division.

Engineering Standards

"Engineering" standards, as distinguished from "manufacturing," are under the control of the Materials Engineering and Parts Standards Department of which H. B. Knowlton is supervisor. This department operates under the director of engineering, and its work is divided into two distinct types of standardization, each one subject to approval, by a main committee. Mr Knowlton serves as chairman of the Engineering Materials Committee and T. G. Sewall as chairman of the Standard Committee.

Part of the work of the Materials Engineering Department and the Engineering Materials Committee is the creation of specifications for all types of materials used in the company's products. As the term "Materials Engineering" implies, the work actually starts with manufacturing trials and engineering tests of new materials. On the basis of the data obtained, advice is given to the engineering departments in charge of design with regard to selection of the best, most economical, and (in times like the present) most available types of material which will give satisfactory engineering performance. The final step is the preparation of Materials Specifications or standards. These specifications are the payoff; they make it possible to put into action the decisions of the Engineering Materials Committee.[1]

International Harvester

In IH's Steel Division, a heat is tapped from an open hearth furnace.

The Engineering Materials Committee is made up of representatives from the Engineering and Manufacturing Departments of the Motor Truck, Farm Tractor, Industrial Power, Farm Implement, and Refrigeration Divisions of the Company. There are also representatives from the Steel Division, the Manufacturing Research Department, Engineering Materials Laboratory, and the Purchasing Department. Materials Control and other departments frequently have representatives who sit in the meetings as conferees.

[1] Mr Knowlton comments: "While specifications are in a sense standards, we differentiate between engineering standards and materials specifications. The differentiation between the two words has been in use in our Company for many years and helps a great deal in our contacts inside and outside the Company."

International Harvester

IH's Farmall M tractor, made by the Farm tractor Division, is shown here in one of its many functions: drawing a 2-way trailing plow moldboard, another of IH's products, which is designed for contour plowing and for irrigated fields.

The Engineering Materials Specifications fill a large loose-leaf binder, and cover all materials used in the Company's products. These include carbon and alloy steels, lubricants, chemicals, nonferrous metals, textiles and leather, ferrous castings, joining materials, and surface coatings.

Mr Knowlton believes it to be essential that the work of this committee be correlated with that of national engineering societies and other standardizing bodies. In line with this policy, IH specifications harmonize with specifications of the Society of Automotive Engineers, the American Iron and Steel Institute, the American Society for Testing Materials, and other nationally recognized specifications for materials. In some cases, company specifications refer directly to nationally recognized standards such as ASTM methods of test, for example. In many cases, on the other hand, special company specifications are needed to describe materials which are essential to the production of Harvester products, Mr Knowlton explains.

Mr Knowlton, a firm believer in national standardization of materials specifications, explains that in times of critical material shortage, lack of national standardization means chaos. Because he believes in active participation in national standardization activities, he has been active in the work of the Society of Automotive Engineers, the American Society of Metals, and the American Society for Testing Materials for many years.[2]

Other members of the Engineering Materials Committee are also active in national standardization activities: F. Sailer, head of the Engineering Materials Laboratory, in the SAE fuels and lubricants division; Garnet Phillips of Manufacturing Research, in ASTM and AFA committees; W. D. McMillan, in charge of metallurgical work in IH imple-

[2] For about six years he served on the National Metals Handbook Committee of the ASM; about 15 years on the Iron and Steel Technical Committee of SAE, and several years on ASTM Committee A-1 on Steel. During the war he served on several special committees on steel and hardenability. At present he is chairman of the automotive panel of the SAE Iron and Steel Technical Committee, as well as chairman of the SAE committee on the new boron steels. Mr Knowlton is an SAE past vice president.

ment foundries, in AFA, ASM, and ASTM activities, to name only a few.

Work on IH specifications does not end with participation in development of national standards, however. There is still the job of selecting those specifications which are of value to the Company and putting them into effect. Where no national standards apply, new specifications may have to be created. Possibly even more important, in Mr. Knowlton's opinion, is the preparation of articles to guide engineers and metallurgists in selecting and applying specifications for Harvester products. Practically all Harvester specifications for materials include paragraphs of general information for this purpose. Longer articles are included in the Engineering Materials Guide, which is sponsored and circulated by the Engineering Materials Committee.

The IH specification covering gray iron castings, developed by Mr G. P. Phillips of Manufacturing Research and the Cast Iron Subcommittee, is an example of a case where it was necessary to develop special IH specifications. Twenty-nine different types of gray cast iron are covered — the most comprehensive cast iron specifications in the country, Mr Knowlton declares. Development of these specifications, and recommendations for the specific applications for which they are to be used, has entailed close work with the foundries that produce castings to IH specifications.

As Standards Engineer and chairman of the Standards Committee, Mr Sewall has the responsibility of keeping in close contact with all sources of supply from which standard parts are purchased, and with national societies. Mr Sewall is a member of Sectional Committee B18 on Bolt, Nut and Rivet Proportions, Subcommittee 6 on Plow Bolts, and of the Farm Equipment Institute Committee on Fasteners.

International Harvester

One engine does all the work, both propelling and operating all moving parts of the No. 125-SP harvester-thresher. This combine puts large scale harvesting within the practical scope of one-man operation. (Farm Implement Division.)

Scope of the work on Engineering Standards is perhaps best expressed in the following list of general functions. The responsibility of the Standards Engineer is to:

1. Control the standardization of parts used in IH products.
2. Standardize Engineering Department practices and procedures.
3. Compile lists of common parts for Engineering Department use.
4. Allot blocks of numbers to Engineering Departments and to other Departments and Works as required, and to control the parts numbering system.

The IH Standards Book (covering standard parts peculiar to the Company's engineering practices and lists of common parts) and the IH Standard Parts Book (covering commercially recognized standard parts) are the product of these activities.

The divisional engineering departments, purchasing department, Canadian Subsidiary, and foreign operations departments are all represented on the Standards Committee, which is responsible for the content of both the IH Standards Book and the IH Standard Parts Book. The Manufacturing Research Department is also invited to have representation at every meeting.

The postwar years devoted to production of peacetime products and equipment have shown an unprecedented emphasis on standardization, reflecting World War II experience. The emphasis not only has been on development of standards but on coordination of standards.

The wartime story of replacement parts that could not be used when urgently needed because different manufacturers identified their products by different names and numbers has been told so often that it does not bear repeating here. However, it had a direct bearing on standardization operations of IH and of many other companies. In order to unify companies' practices, the Government called for the use of General Motors parts numbers as a uniform identification of standard parts. International Harvester, along with a great number of other companies, complied with the government's request and adopted the GM parts numbering system. This, of course, means that a great number of parts, common to many companies, would carry the same identification number. Wherever the GM system does not provide a number for a standard part used by IH, an IH number is assigned. These part numbers are distinguishable from those of GM by the use of a suffix "R1."

The standard parts are covered on sheets showing a sketch of the part along with complete specifications and the part numbers assigned either by GM or by IH. The engineering departments are instructed to make use of standard parts wherever possible, and these parts when specified are listed in machine specification lists and other records by

(*Continued on page* 288)

Report from France

French Embassy-Information Division

Beautiful Mont St Michel, a symbol of pastural France.

This article has been prepared from material submitted by AFNOR, the French Standards agency.

THE official introduction of standardization in France dates from about 30 years ago. More exactly, it can be traced to promulgation of a decree of June 10, 1918, which established the Commission. Permanente de Standardisation (Permanent Standardization Commission), or CPS. Within only a few years, the CPS had initiated about 87 standards or proposed standards —a remarkable achievement, which serves as the foundation for present French standardization. Because it was always in financial difficulties, however, the Commission was finally obliged to cease work in 1924.

Soon afterwards, on June 22, 1926, l'Association Française de Normalisation (the French Standards Association), or AFNOR, picked up the torch which temporarily had been dropped. Successive laws, decrees, and administrative orders, issued in 1928, 1930, 1938, 1939, and 1941, have fixed the role of AFNOR. Each one of these orders has underscored more definitely the national and official character of AFNOR's work and in that way has strengthened the Association as the representative of France in the international field. This legislation however, has consistently preserved AFNOR as an essentially independent organization. Through the association of producers, consumers, and representatives of the state, AFNOR presents and harmonizes divergent viewpoints in a rigorously neutral atmosphere.

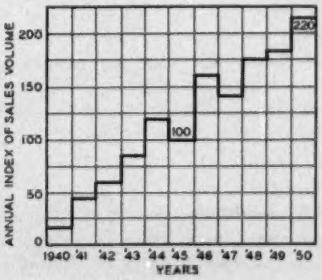
AFNOR coordinates the work of 34 Bureaus de Normalisation (Standardization Committees) which are managed and activated by manufacturers' associations, professional or technical societies, or by certain important groups such as the Société Nationale des Chemins de Fer Français (National Society of French Railroads), or SNCF. The committees accept suggestions and studies from standards departments of companies and other national enterprises.

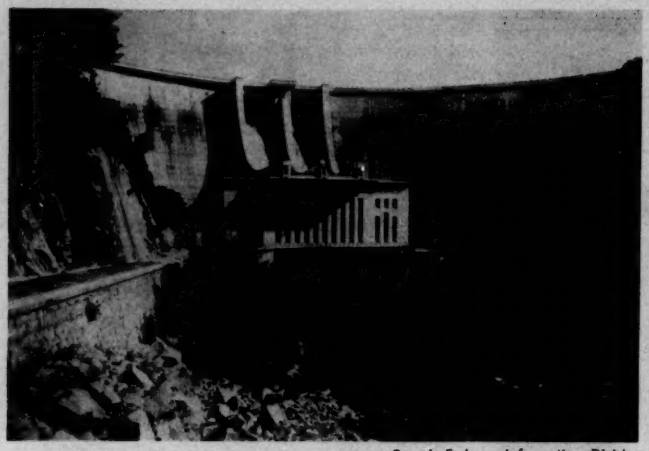
All French enterprises of any importance are members of AFNOR and generally have their own set of standards on which their work is based. Their individual standards departments often perform real service in standardization on a national scale.

The government works with AFNOR through the Commissaire de Normalisation (Commissioner for Standardization). This officer controls the work done by AFNOR, submits proposed standards to the Government for Ministry approval, and supervises the application of approved standards.

In brief, originating within the standards departments of individual enterprises a proposed standard becomes an approved standard after passing through three stages:—Standardization committee (professional, or technical, stage); AFNOR (a private and technically neutral organization—coordinating stage); and—the Commissioner for Standardization (high official representing the government—final stage).

When a standard has been approved, it reverses its course back through the promulgation services of AFNOR and through the Standardization Committees to the industries and services to which it will apply or which will require that it be applied. All standards published by the Standardization Committees under AFNOR procedures have been grouped under the name "Normes Françaises" (French Standards) for some years. The symbol of these standards, "NF," is followed by a letter symbol to indicate the particular field to which the standard belongs. By January 1951, 3,400 stand-





French Embassy-Information Division

Built to standard specifications, many of them obligatory, St-Etienne-Cantales is a model dam with the spillway built above the electric generating plant.

ards of all types had been approved, and 2 to 3 thousand proposed standards were in work.

Of the thousands of standards sent out daily, one third goes to producers, another third to consumers, and the final third to technical schools or to persons who are not professional producers or consumers of the particular product covered by the standard. There are three ways of using standards:

For reference.

For economic reasons.

For administrative and regulatory purposes.

1. Use of Standards for Reference—

Eight percent of producers, 20 percent of consumers, as well as schools and technicians, refer to the French standards "a job done, and well done" which helps to avoid unnecessary fumbling.

It is estimated that about 85 percent of the standard symbols for mechanical drawings are actually applied in practice, as compared with 75 percent of standard physical tests of metallurgical products, and with 40 percent of standards relating to the tests of leather and hides.

2. Use from the Economic Point of View—

Under this classification are standards which result, either by the producers' own volition or by demand of the consumers, from the desire for the benefits and economic advantages of standardization.

(a) Application of Standards on the Initiative of Producers—

Standardization is an element of productiveness which has not escaped the attention of the majority of manufacturers. Statistics show that approximately 25 percent of standards ordered by producers are put into effect in order to improve their production methods—without any pressure on the part of customers.

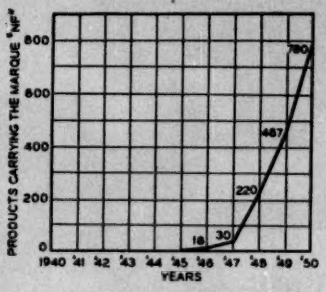
Nevertheless, a serious effort has still to be made to convince a great number of conservative or too individualistic producers of the advantages of simplification and standardization. This effort may be made, of course, by using the classical methods of propaganda; exhibitions, conferences, posters, etc. But, the most effective pressure which could be brought to bear on an industry would be strong views, wishes, and demands of customers. A producer may be deaf to any number of logical arguments but very rarely will be overlooked or disregard an important market condition or situation.

(b) Application of Standards on Consumers' Demand—

The mere fact that standards describe characteristics or methods permits those who use them to eliminate improvisation or repetition of descriptions. Simple reference to the standard is sufficient. Conformity with standards not only has the advantage of simplifying the writing of orders, but also offers numerous special advantages in economies for consumers who often insist on a standard. These advantages are very well known in all countries and it is not necessary to dwell upon them here.

Of importance in France is the quality of standardized merchandise. For instance, a contractor who orders "oak parquet, class K, standard NF B 54-001" or "cement 50-100 CLX, Standard NF P 15-306" thus defines precisely all the properties he expects to obtain from the products which will be delivered to him. French standards have the reputation of vouching for a general high level of quality and the consumer is most appreciative of the guarantee given by them.

The fact that very often conformity with standards, as well as a guarantee of quality, is requested by buyers, is undoubtedly directly related to the growing success of the "Marque Nationale de conformite aux normes" (the National Mark of conformity with standards), or "Marque NF." These guarantees and the use of seals bearing the Marque NF are entirely voluntary on the part of the producer. At present, the Marque is applied to gas appliances, domestic electric appliances, coal stoves, aluminum kitchen ware, wood fiber, mortars and cements, and some laboratory equipment. Application of the Marque to other merchandise is under study.



It is interesting to note that when a product bears a seal, Marque NF, it is a considerable factor in the application of standards related to the product; extension of the Marque to a new field results in more than 80 percent increase in application of related standards. This is sufficient proof of the interest of both producers and consumers in the existence and meaning of the "Marque NF".

3. Use of Standards for Administrative and Regulatory Purposes—

This third category consists of cases where standards are used as a basis for establishing mandatory regulations or rules.

The application of standards, which is the subject of this article, is as much the responsibility of French authorities as of the groups who develop them.

This article will not consider the "de facto obligations" which obliges manufacturers to conform to standards or be punished by loss of sales for their product. This "de facto obligation" results from the insistence of buyers, and is a consequence of the principle of free use of standards for economic reasons. Considering the legal or regulatory mandatory requirements for conformity to standards, there is one example of special importance. This is the decree issued on November 12, 1938, and reaffirmed May 24, 1941. It reads:

> "Application of officially approved standards, or explicit mention of their application, is mandatory in all clauses, specifications, contracts, and requests for bids issued by the state, individual departments, local communities, and any public establishments, or subsidized enterprises."

Although the number of standards that have been made obligatory is very small (less than 5 percent of the total number of French Standards), the forms of contracts and bids calling for their application are too numerous to be quoted within the scope of this article.

These mandatory stipulations have as their immediate effect the application of standards in connection with 95 percent of the products of which public communities are the principal buyers; such as, aeronautical parts and equipment, railroad materials, or mining materials. The intervention of public authorities takes place only in those cases in which it has been considered absolutely indispensable to call for the effective application of standards and when such use of standards is of general public interest.

Thus all metallurgical standards, all standards covering cans for preserving foods, standards for a minimum plumbing code, the minimum gas installation code for cities and country dwellings, standards for definitions, and for nonflammable cinematographic film, all have been made obligatory by the government.

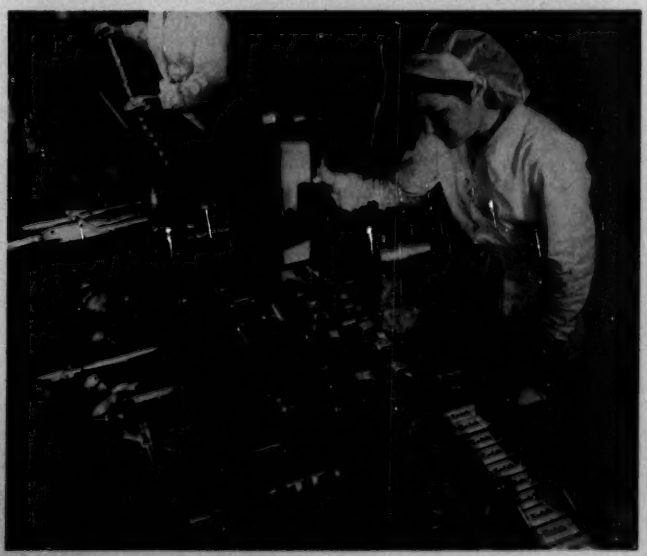
The obligatory character of stipulations forces the engineering bureaus to become acquainted with standards and to study their application by an industry which has made at least one delivery, or even has submitted a bid to a government or public agency.

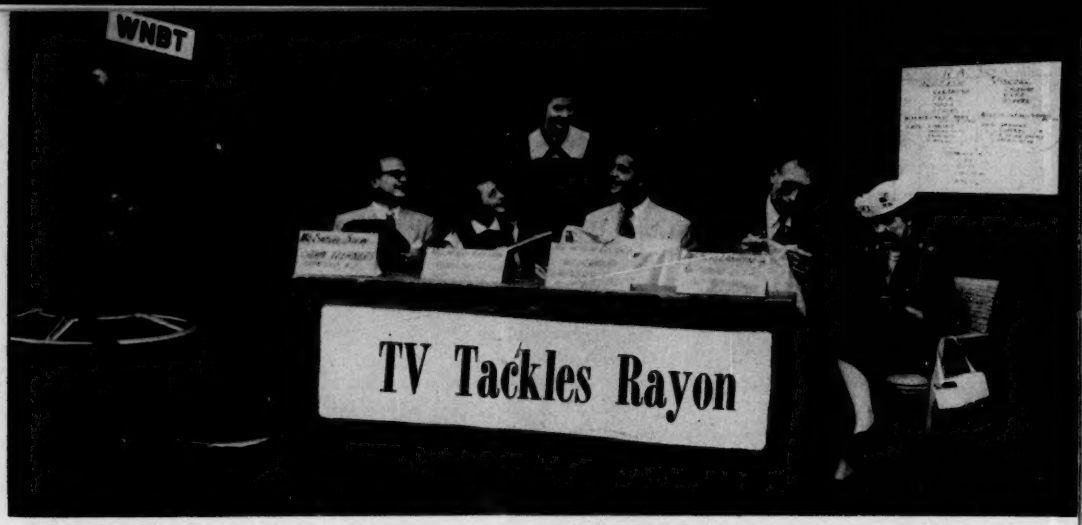
In fact, statistics show that these legal obligations, making all products delivered for the use of public institutions conform to standards, are the origin of more than 50 percent of requests for standards from producers; more than 60 percent of requests from the sources of administrative orders; and represent 40 percent of the total requests for standards.

The statistics from the Sales of Standards Department of AFNOR show that each year the number of requests for standards is growing. Either these standards are added to existing collections or they are purchased in order to start entirely new sets. These collections of standards may be considered part of the industrial equipment of the country; this equipment is growing at an accelerated rate.

Kodak's amateur film, is not required to meet the government obligatory standards for cinematographic film. Below, it is being automatically packaged.

French Embassy-Information Division





Left to right: Samuel Stein, Mrs. Henry D. Lauson, Kathi Norris, Arthur Gelnaw, Dr. Jules Labarthe, Jr, and Miss Ardenia Chapman.

THE Kathi Norris television show (WNBT, New York, daily from 1:00 to 2:00 P.M.) advertises products of interest to homemakers. On Tuesday afternoon, July 17, Kathi added a special feature—a discussion and demonstration of the proposed American Standards for rayon fabrics. A scientist, a dean of a school of home economics, a laundry operator, a dry cleaner, and a housewife joined in the discussion and demonstration. They told why they are not satisfied now with the service rayon fabrics are giving, and why they believe use of the proposed American Standards will help them.

All agreed that when the proposed American Standard specifications and tests are used, consumers will get better wear from the garments and home furnishings they buy, and retailers, cleaners and launderers will receive fewer complaints of ruined garments and unsatisfactory fabrics.

Samuel Stein, president of the Swan Cleaners, Crawford, N. J., showed the television audience a dress that contained a buckram stiffening in the back. The dress was ruined because the color of the buckram ran. He objected to the fact that dry cleaners are held responsible by the public for such losses. "We feel the responsibility should be on the manufacturer," he said. "If the proposed American Standards are followed, and if the homemaker will look for labeling on materials as she looks for pure food labels, dry cleaners and launderers will not have these headaches."

Mrs Henry D. Lawson, New York housewife, displayed a "permanent finish" fabric that had been "nice and crisp" when new but was sleazy and shapeless after laundering. "I don't know who is responsible," she said, "but this was laundered according to instructions."

Two similar sport shirts were displayed. One had been washed and shrunk badly. Consumers need a tag to inform them that fabrics meet the requirements of the proposed American Standards, Mrs Lawson said.

Arthur Gelnaw, president of the Westwood Laundry, Westwood, N. J., backed up the complaints of dry cleaners and housewives by citing similar experiences of laundrymen. The dress he showed was beautifully made, of attractive material. The trouble was in the thread. Not being colorfast, the color in the thread ran when the dress was laundered and ruined an otherwise beautiful garment.

"We like rayon," Mr Gelnaw said, "but the trouble lies in the way some people use it. We believe that when labels appear on these garments we can wash with confidence that the end result will be satisfactory."

Dr Jules Labarthe, Jr, senior fel-

(*Continued on page* 292)

Who Pays for This Shirt?

This blue rayon gabardine shirt, bought at one of the better department stores in New York, was sold as washable. In one home washing, the collar shrank 1½ inches, the collar button and the button below the collar could not be fastened, the sleeves shrank 3½ inches, and the shirt was uncomfortably snug around the chest. For this shirt to have met the standards would have cost an extra 15 or 20 cents. Would it have been worth it? Reprinted from a pamphlet of the American Association of University Women in cooperation with the Consumer Interests Committee of the American Home Economics Association.

Some Adventures in Military Standardization

by Rear Admiral M. F. Schoeffel

Chief, Bureau of Ordnance, U. S. Navy Department

DURING the past war I was for nearly three years one of the representatives of the Bureau of Ordnance of the Navy Department on an inter-service committee for the standardization of aviation ordnance. The committee had been established in the early spring of 1941 to tackle the problem resulting from the fact that the British were then purchasing many service types of American aircraft and were having difficulty in making arrangements to carry their bombs on these planes. At first, things had been relatively smooth because the aircraft manufacturers could set up their lines to accept the British bomb racks and shackles. With the advent of Lend-Lease, however, no one could foresee far in advance whether airplane Umpteen Thousand and Twenty-eight would be delivered to the British or to one of the American services. The airplane manufacturer could not plan the layout of a specific plane on a firm basis.

The Joint Aircraft Committee, composed essentially of the Chiefs of the Navy Bureau of Aeronautics and the then Army Air Corps, set up a Bomb Standardization Committee to correct this situation. The initial directive to the committee was to the general effect of requiring American bombs and bomb release gear to be designed in such a way as to accept the British bombs. At times this "one way standardization" caused some degree of annoyance, but in general it was not an important factor.

The committee was initially formed with representation from the Navy's Bureau of Ordnance and Bureau of Aeronautics, from the Army Air Corps, and from the Army Ordnance Department. Nonvoting representation was also arranged for representatives of the British Royal Air Force. As time went on, representation from the Army Chemical Corps was also included and representatives also appeared occasionally for the British Navy's Fleet Air Arm.

Both the U.S. Army and the U.S. Navy had much to gain from this effort at standardization, but the chief gainer was obviously the British RAF. The men who represented the RAF were always of very high caliber, men who understood both the development and the design aspects of material and also who could roll up their sleeves, take a screw driver or wrench, and make the material work. They could use their heads and were also entirely willing to get their hands dirty.

Prior to the organization of this committee, the Army and the Navy Ordnance organizations had made some efforts at standardization but they had not led to much. I well remember attending, in 1936, in company with Admiral Hussey, the present managing director of the American Standards Association, conferences on this subject. After much discussion, these conferences came up with a few agreements on the subject of the spacing and size of the bomb-release carrying lugs and on the screw threads to be used on the bomb fuzes. Such a small area of agreement sounds very picayune but the one on the spacing of the bomb lugs really did have an important and basic effect upon our ability to get together in broader areas five years later. These particular agreements were entered into in good faith at the time they were made but unfortunately there was little reason to keep them in the forefront of people's minds. By 1941 they had been more or less forgotten. The realization that these previous agreements had been overlooked and gradually departed from by both services led the committee of the war years to adopt the principle of single service procurement in large measure, in order to insure that there would be no more forgetfulness in the future.

When the committee first met in 1941, the Navy had a series of bomb bodies varying in size but all essen-

Official Department of Defense Photo

Ordnancemen check the bomb fuzes on a heavily loaded Navy Skyraider before the plane is launched for its target in North Korea. Called the workhorse of carrier aircraft, the Skyraider can carry three 1000 lb bombs.

tially alike in their geometric shapes and thicknesses. They would now be described as of the "general purpose" type. The Navy had the only two varieties of fuzes, one type composed of basically similar nose and tail fuzes for the 500 and 1,000-lb bombs, each fitted for a delay calculated to give optimum performances

Official US Navy Photograph

The effectiveness of bombs depends on the care given the fuzing operation. Above is a final adjustment.

after penetrating the light weather deck of a ship, and a second type which was an instantaneous nose fuze for one hundred-lb bombs. The Army had some light fragmentation, anti-personnel bombs and "general purpose" bombs ranging up to 2,000 lbs in weight. The Army fuzes were generally capable of being pre-adjusted from instantaneous to delays of a considerable fraction of a second, were much cheaper to manufacture than the Navy's fuzes, and contained far fewer safety features than the Navy fuzes. The Navy had under development a 1600-lb armor-piercing bomb and a depth bomb of about 350-lb weight, both with appropriate fuzes. The Army was considering heavier "general purpose" bombs. There were no incendiary bombs and none under development, as information from Europe up to a short time before had tended to deprecate this type completely.

As can be seen from the above list, American thinking had tended toward the standardization of bombs and fuzes within each service to such an extent that the number of functions which could be performed was strictly limited. There was almost a complete absence of "spring styles." For three or four months after the committee was formed, discussion raged with the British as to whether we should adopt a single type of bomb case with variation only in the size. At that time the British had essentially two types of bombs. Their general purpose bomb had a cast steel case and carried about 30 percent of its total weight in explosive. They also had a newly developed "semi - armor - piercing bomb" which carried, if I remember correctly, 15 or 20 percent weight of explosive. The American general purpose bombs, both Army and Navy, were manufactured by a forging process from seamless steel tubing and could carry about 50 percent of explosive. Everybody on the board was strongly in favor of getting the high percentage of explosive of the American type of manufacture, but the British said they just could not build such bombs in Britain. For a long time we were all rather hypnotized by the words "armor-piercing," "semi-armor-piercing," and "general purpose," and could not divorce from our thinking the then-current percentages of explosive as being synonomous with those names. Finally the Bureau of Aeronautics representative, Commander (now Rear Admiral) W. F. Boone, broke the log jam by suggesting that we adopt the Bureau of Ordnance armor-piercing bomb as the standard in that class, that the Army design a forged bomb of about 30 percent explosive to be our semi-armor-piercing, and that we adopt the Army designs in the 50 percent explosive class as our general purpose bombs. Simple and elementary as this decision appears in retrospect, it was arrived at only after many weary hours of discussion in which unfortunately the woods had been lost sight of for the trees.

It was decided about that same time that the Navy's design of depth bomb would be standardized. After important modifications to improve their safety and reliability for Navy use in carrier aircraft, most of the Army's fuze designs were adopted, because of their greater ease and cheapness of manufacture. The job of redesigning these fuzes was a most onerous one and great credit is due to the Army Ordnance representative on the committee, Colonel S. R. Stribling, for carrying the job through fast and well and to the satisfaction of all concerned.

In connection with these decisions as to the designs to be standardized, most important decisions were made as to procurement. It was agreed that the Army would provide both services with the general purpose and semi-armor-piercing bombs plus their fuzes, while the Navy would provide both services with the armor-piercing and depth bombs and their fuzes. Certain safety clauses were

Official US Navy Photograph

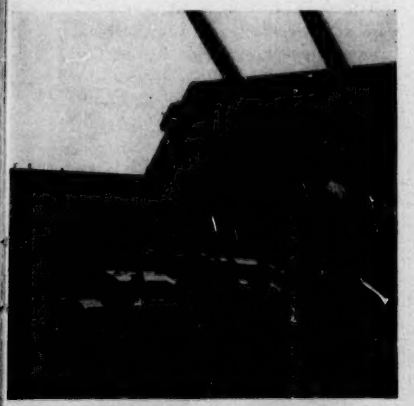
Before they are loaded on the planes, bombs receive a final once-over on the flight deck by two ordnancemen.

inserted into the agreements which insured that the views of the non-producing service as to necessary modifications would be thoroughly considered and that the producing service could not make changes which would affect the safety of the bomb, or its ability to be loaded and carried, without the concurrence of the others concerned. These agreements have since been scrupulously carried out in the best of faith. The assignment of single service procure-

ment insured that the standardization agreements were not again forgotten as had been those of five years previously.

By the late summer of 1941, discussion raged over incendiary bombs, which had shortly before become of much importance in the European struggle. At this point the Chemical Corps was called into the committee. The British naturally argued in favor of the standardization of a design which would be effective against the heavy slate and tile roofs of Germany.

Such a bomb was designed and adopted as an AN standard, although we Navy representatives tended to shake our heads and wonder whether these heavy bombs, with their considerable penetration, would not go clear through the light construction of the Asiatic countries and bury themselves harmlessly in the ground. In 1942 or 1943 the idea of a very light case, jellied gasoline bomb was brought forward and was pushed by certain interested parties to the point of calling those who did not see eye to eye with them "traitors and murderers." Actually, there was a distinct tactical need for both types depending upon the characteristics of the target. Eventually both were made standard articles and were used to good effect in the theatres where the type of construction was appropriate.



Official US Navy Photograph

Standardized bomb trucks hold the bombs steady on the elevator from the "basement" to the flight deck.

Once the log jam of starting the standardization of bombs and fuzes was broken in mid-1941, business began to buzz. The scope of the committee was extended from bombs alone to practically all types of aviation ordnance and armament. Guns, sighting systems,, gun cameras, bomb release and handling gear, rockets, aircraft mines, etc., were all included in the scope of the committee's work. Every effort was made to assure interchangeability of such items as bombs and mines with a very considerable degree of success. The principle of the assignment of a single service responsibilty outlined previously in this article was maintained throughout and consistently worked well. I am convinced that had this principle not been adopted the effort to obtain and maintain standardization would have been a failure.

Certain administrative aspects of the committee's work were distinctly cumbersome. The Chief of the Army Ordnance Department and the Chief of the Bureau of Ordnance of the Navy each had legal responsibilities for the effectiveness of the weapons supplied to their services. Each had developed, prior to the war. material of high quality, well suited to the needs of his own service, and each was somewhat doubtful as to the wisdom of adopting the material worked up by the other fellow. Neither gave his representative a clear cut grant of authority to walk into a committee meeting and to say "What is agreed to here will be approved by my organization." We representatives were at first representatives, not plenipotentiaries. We had to carry our agreements back to our bosses, who were often very skeptical men, for confirmation. As time went on, however, our respective chiefs began to gain confidence in the soundness of our work and eventually we found little or no difficulty in getting approval of our agreements.

As the result of my experience with this committee I consider that there are a number of principles which are essential to a successful and continuing standardization of ordnance items between a number of military services.

Official US Navy Photograph

A 1000 lb bomb is hoisted to the wing of a Skyraider from the bomb truck before a raid over Korea.

(*a*) The head of each service must either give his representative plenary powers or must repose strong confidence in him.

(*b*) The services primarily interested must reach technical agreement on the essential features of an article while it is in its development stage, otherwise "standardization" is in reality merely the adoption of an article as a stop gap.

(*c*) The development and production of the article must be assigned to one service.

(*d*) The designing and producing service must keep the others informed of all prospective changes that affect previously agreed upon important aspects of the article.

(*e*) The nonproducing user must be permitted to thrash out with the producer his ideas of changes that may be required after the article becomes a fact.

(*f*) There must be a strong spirit of cooperation and trust among all concerned.

And on top of all this you must keep on watching the other fellow all the time because, no matter how honest he may be, it is plain human nature that he will have to change things and he will not remember your interests as well as you do yourself.

Why American Libraries Want International Standards

by Miss Janet Doe

WITH the rapid growth made in recent years in the ease of communication, in the widespread use of libraries, and in the difficulties arising from the vagaries of the printed page, there has gradually taken form a sharp need for the standardization of the materials and methods applied in these fields. The problems are the same throughout the reading world, but each country—and almost each library and each publication in each country—has evolved varying answers. Periodicals are issued in all forms and sizes, with and without titlepages and indexes, changing their names whenever the spirit moves them, starting new series or differing format equally freely. The ways of abbreviating the titles of periodicals are legion; the duplication of titles from country to country, and even within the same land, is astonishing. The spelling of Slavic names and titles varies with their rendering into the Western languages, several variations occurring within a single language. Differing sorts of microfilm will not fit all reading-machines, and vice versa. Library statistics seem to have sprung from the Tower of Babel; some libraries count as readers each visit made all through the day by an individual, while others register a given person but once a day; some call every item on their shelves a "volume," while others distinguish between "books" and "pamphlets," and yet others count as "volumes" only bound and accessioned material. It is manifestly necessary, if we are going to deal conveniently and usefully with colleagues in all countries, for us to standardize our terminology, our materials, and our methods as far as practicable.

An earlier attempt to do this was made a dozen years ago but fell into abeyance because of the War. Work along these lines has been carried on

Miss Doe is Librarian for the New York Academy of Medicine. She is acting as chairman of ASA Committee Z39 on Standardization in the Field of Library Work and Documentation, and as representative of the Medical Library Association on the committee.

in several foreign countries for some years, but without American representation. Now the project is being revived by the Council of National Library Associations which has undertaken the sponsorship of Sectional Technical Committee Z39 of the American Standards Association. The latter Association helps to organize standardizing committees and fosters the standardization of any aspects in any field whose members think it desirable. At an organizational meeting in April, this Committee Z39, made up of representatives from most of the CNLA member-associations and from various other interested organizations, outlined its objectives and its immediate fields of work. As a definition of its scope of activities, the members adopted the following:

> Standards for concepts, definitions, terminology, letters and signs, practices, methods, supplies and equipment used in the field of library work, and the preparation and utilization of documents.

It will be seen that the field has been made as broad as possible, so that any topic may be considered which libraries believe needs standardization. It will be the function of this committee to draw up proposed American Standards for approval by the American Standards Association; to cooperate in the work of the International Organization for Standardization in securing international uniformity of standards where possible; and, further, to promote the use of national and international standards in practice.

As a beginning, Committee Z39 set up four subcommittees which are to start work on these topics:

Abbreviations for Periodicals,
Chairman: Mr Harold Oatfield, National Research Council.

Cyrillic Transliteration,
Chairman: Dr Maurice F. Tauber, American Library Association.

Layout of Periodicals,
Chairman: Mr Ralph H. Phelps, Association of College and Reference Libraries.

Library Statistics,
Chairman: Miss Helen B. Uhrich, American Theological Library Association.

Other topics under consideration for standardization are: title references for literature and the sizes and forms of index cards, slips, and other forms for documentation; and documentary reproduction, with special reference to equipment. The personnel for these subcommittees is drawn from many types of libraries and from related organizations, since the problems to be solved concern many different fields.

While the difficulties in library work and documentation which arise from varying practices are not likely to be as acute as those resulting in the mechanical trades from the use of right- and left-threaded screws, or in the electrical world from light-bulbs of different sized bases, there is still a vast deal to be gained from the standardization of certain simple procedures in library practice. It is the aim of Committee Z39 to secure agreement on these as far as that appears feasible. Suggestions for further specific topics to be considered will be welcomed from anyone interested. The committee expects to hold its next meeting in the fall, at which time it is hoped that progress in all of its several undertakings will be reported.

Electric Plant Beats Bottleneck

FACED with rising costs, material shortages, and production bottlenecks, Philadelphia Electric Company used standard specifications to cut costs and ease the pinch of short materials. The story of how "Equipment Standards Cut Costs and Erection Time" is told by D. F. Schick and B. R. Nevins in the June 1951 issue of *Power*.

"Looking over the latest Barbadoes units, No. 3 and 4," the authors say, "you will find that much of the equipment conforms to standard specifications. This contrasts with the practice in many stations of issuing specifications to meet special requirements."

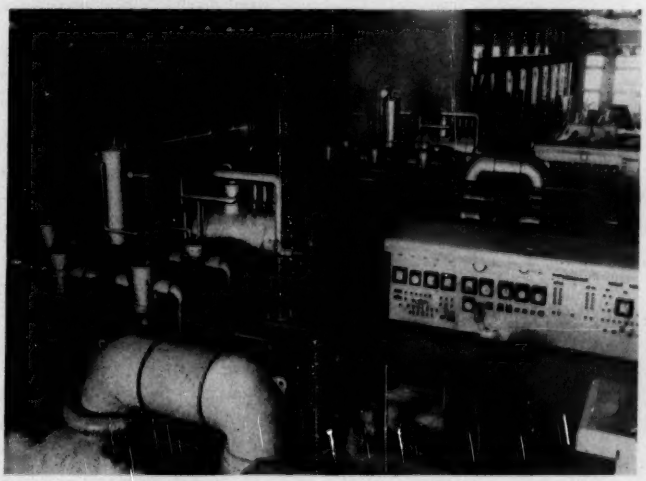
Standardizing lowered the first cost of the plant and made possible definite time savings, it is explained. This was particularly important because Philadelphia Electric had to expand its Barbadoes plant when materials were short and deliveries long. "Selecting standard equipment helped to ease the pinch and saved money to boot," it is explained.

Specifically, preferred - standard turbine units were chosen in accordance with standards prepared by a joint committee of the American Institute of Electric Engineers and the American Society of Mechanical Engineers. "Manufacturers immediately offered standard units at a price and time advantage," Messrs Shick and Nevins declare.

The company adhered to standards throughout the station. Analyzing them, they found that they were making use of American Standards under the classification "A—Civil Engineering and Construction" covering cements, fire tests of building construction, the Building Exits Code, building construction safety code, scheme for identification of piping systems, plumbing code, coordination of dimensions of building materials. Under ASA's classification "B—Mechanical Engineering" were the Unified and American Screw Threads; pipe threads; cast-iron pipe flanges and flanged fittings; steel pipe flanges and flanged fittings; Code for Pressure Piping; welded and seamless steel pipe; lap-welded and seamless steel pipe for high-temperature service. High-pressure piping, including high-pressure steam mains, boiler feed, soot blower piping, and steam piping to auxiliaries are all in accord with the latest edition of the American Standard Code for Pressure Piping, they found.

Philadelphia Electric Company

The Barbadoes extension adds 120,000 kw to Philadelphia's available electric supply. Turbine Hall accommodates the main units;—60,000-kw preferred-standard turbines, heaters, evaporators, control boards for both turbines and boilers. The 600,000 lb-per-hour steam generators supply steam at 850 psig, 900 F. Each boiler-turbine unit has its own set of boiler feed pumps. (Below)



ASA's group "C" of American Standards on Electrical Engineering includes rotating electrical machinery, power circuit breakers, transformers, current limiting reactors, electrical conductors.

(Continued on page 288)

Some Legal Aspects of Sampling

JUST as the use of specifications and sampling procedures have already cut down litigation through the elimination of causes of commercial disputes, the new quality control techniques will further reduce resort to courts, according to a recent article in *Industrial Quality Control* by Professor F. R. Kennedy, of the College of Law, State University of Iowa. Titled "Legal Aspects of Sampling," the article appears in two parts, in the January and March issues of the magazine, official organ of the American Society for Quality Control.

Professor Kennedy points out that the courts have come to recognize methods of sampling through the common law process. So far as he knows, the expression "quality control" does not yet appear in any legislation or in any recorded court opinion, but he expects that this new technique will receive legal recognition.

Professor Kennedy discusses three types of sampling which have been ruled upon by courts and commissions. These are:

1. Sampling for tests and inspection to determine compliance with specifications.
2. Sampling by the Food and Drug Administration to determine compliance with law in regard to adulteration and misbranding of food and drugs.
3. Sampling of public opinion taken as evidence of unfair trade practices, in cases involving infringement of trade names or infringement of distinctive markings on packages.

The practice is increasing of laying down the method of sampling in either the specifications or the contract. Failure of samples, taken as prescribed, to conform to specifications may be sufficient to constitute a breach of warranty as to the entire product.

From a lithograph by Wm Sharp, Courtesy of Weythe Galleries. New York Public Library

The Food and Drug Act of 1938 is mainly directed against adulteration and misbranding. The size of samples, taken by the government has frequently been a bone of contention between lawyers. Some defendants have argued that it is unjust to condemn an entire shipment because a few samples fail to comply with the law. But the courts have generally ruled otherwise.

A canner argued that the courts should not destroy 1600 cases of good salmon because 400 cases were found to be adulterated. The court ruled that it was up to the canner to select the good from the bad if he wished to save it. An entire shipment of another product was condemned because 30 items out of 22,000 were found to be defective. This decision was sustained by the appellate court.

It has been reported that the Food and Drug Administration generally takes the legal position that *every package* of any food must comply fully with the law.

L. D. Elliott, recently retired Associate Commissioner of Food and Drugs, is quoted to the effect that few plants inspected by the Administration now employ quality control procedures. Hence the Administration is as yet unable to make use of their advantages in inspection.

Professor Kennedy says that courts are considering evidence based on sampling of public opinion with increasing favor. He cites two cases, however, where the court ruled that the sampling of opinion had been improper. One of these involved the claim of infringement in patterns of silver-plated ware. Another involved a dispute over the exclusiveness of a claim to the name of dress shops.

A third case involved the use of a red-and-white label on canned food products. Opposing experts on polling methods testified for the litigants. In its ruling the court acknowledged that it considered the opinion surveys but it held against the party who presented the survey evidence, on the issue of consumer confusion. Public opinion experts out of court have suggested that the variety of situations met with may justify different methods of sampling.

The 82 footnotes attached to Professor Kenredy's paper contain numerous refeiences to court and Commission decisions.

He concludes that, "The practically universal acceptance of the validity of quality control methods by mathematicians, engineers, governmental agencies, and industrial managements should assure its acceptance by the courts."

Accurate Measurement for Better Hearing

DOCTORS attempting to diagnose a patient's loss of hearing now can rely on the American Standard Specifications for Audiometers for General Diagnostic Purposes to assure reliable test results. The new standard, developed under the sponsorship of the Acoustical Society of America, and approved by the American Standards Association, has just been published. It describes a standard audiometer and standard procedure for measuring hearing that will give doctors a dependable comparison with the "normal threshold of audibility" as a basis for prescribing hearing aids or other remedial measures.

Research is still being done to determine what this "normal threshold" actually is. The standard, therefore, does not represent the final word in accuracy of measurement. However, for adjustment of devices in order to correct deficiencies in hearing it is more important to know how a person's hearing has changed from one test to another than to know what his hearing is in terms of accurate measurement. The new standard provides an audiometer that assures consistency of results as well as a uniform method of testing audiometers.

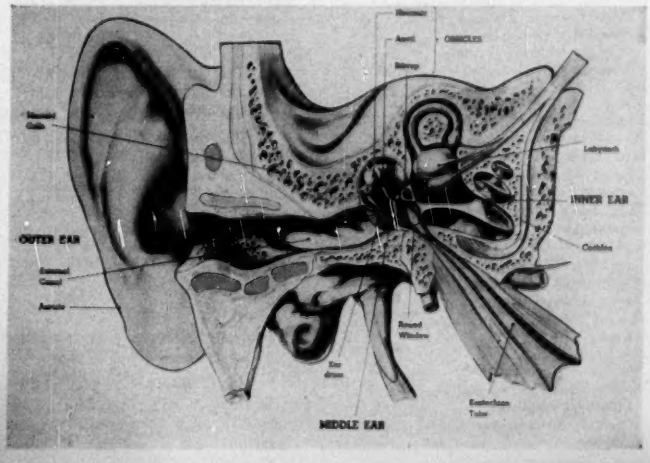
The threshold values by which normal hearing is measured are based on a study made in 1935-36 by the National Health Survey. A large number of individuals between 18 and 30 years of age, with presumably normal hearing, were tested at that time. The average response was taken as the "normal threshold of audibility." Since that time a great deal has been done in all phases of electronics and acoustics, and many advances have been made, ranging from the design of ear phones to methods of measuring circuit design. However, until a comparable survey is made and more definite findings have been recorded as to what constitutes "normal" hearing, the National Health Survey remains the only authoritative data available.

The audiometer described in the new American Standard is an electroacoustic generator with associated air- and bone-conduction receivers, and provides pure tones of selected frequencies and intensities which cover the major portion of the auditory range. The results of measurements with this audiometer determine an individual's auditory threshold as a function of frequency.

The standard itself is intended for use by manufacturers and in testing laboratories to assure that audiometers are satisfactory for diagnostic purposes. Because some of the requirements are minimum requirements, it is expected that manufacturers may build instruments with additional facilities. It is not intended to discourage this.

Suggestions for improvement in the standard will be welcomed.

Copies of the American Standard Specifications for Audiometers for General Diagnostic Purposes, 224.5-1951, can be obtained from the American Standards Association, 70 East 45 Street, New York 17, N. Y., at 50 cents each.



Standards From Other Countries

MEMBERS of the American Standards Association may borrow from the ASA Library copies of any of the following standards recently received from other countries. Orders may also be sent to the country of origin through the ASA office. The titles of the standards are given here in English, but the documents themselves are in the language of the country from which they were received.

For the convenience of our readers, the standards are listed under their general UDC classifications.

621.89 Lubrication

AUSTRIA	ÖNORM
Steam Cylinder Oil	C 2010
Compressor Oil	C 2015
GERMANY	**DIN**
Lubricating Oil for Refrigerating Machines	51503
Determination of Moisture Content in Cold Lubricating Oils	51552
Determination of Paraffin Content in Cold Lubricating Oils	51590
RUMANIA	**STAS**
Greases	1608

624 Civil Engineering

AUSTRIA	ÖNORM
Wooden Structures. Calculation and Admissible Loads	B 4100, 2nd pt.
FRANCE	**NF**
Doors, Outside and Inside, Standard Dimensions of—	P 01-005
Different Types of Wooden Door Frames, Plain and Panelled, One-or Two-leaf, with or without Transom, Structural Dimensions of—	P 23-422/-425,-427/8
GERMANY	**DIN**
Admissible Variable Moving Loads in Building	1055,B1.3
Ready-made Structural Elements of Reinforced Concrete	4225
Basic Room Sizes for Civil Dwellings	18010
Number and Height of Steps for Different Flights	4174
Prefabricated Reinforced Concrete Beams	4233
Flanged Dial-type Pressure Gages	6697
RUMANIA	**STAS**
Wooden Doors, Series A, for Industrial Purposes	470
Metal Structures. General Calculation	763
Cast Iron Structures. Calculation	766
Riveted Metal Structures. General Rules	767
Welded Metal Structures. General Rules	768
Wooden Structures. Classification	856
Wooden Structures. Materials	857
Wooden Structures. Rules for Civil and Industrial Structures	861
Admissible Loads of Non-permanent Nature in Civil and Industrial Constructions	946
Metal Structures. Materials	947
Reinforced Concrete Structures. Testing and Maintenance	1336

625.2 Railway Rolling Stock

POLAND	PN
Indicator Board for Railway Cars	K-77041
Round and Oval Connecting Links	K-82194/5
SPAIN	**UNE**
Tolerances for Coupled Axles of Locomotives	25015
Tolerances for Wheels of Locomotives	25016
Tolerances for Axles and Crankshafts of Locomotives	25017

628.2 Sewers

FRANCE	NF
Nine Standards for Non-pressure Sewer and Rainwater Pipes and Fittings of Asbesto-cement, normal series	P 16-403 thru P 16-411
Seven Standards for Non-pressure Sewer and Rainwater Pipes and Fittings of Asbesto-cement, Reinforced series	P 16-412 thru P 16-418
Funnel and Cover for Asbesto-cement Conductor Pipes	P 36-401
Pressure Asbesto-cement Pipes for Water Lines	P 41-301
Four Standards for Pressure Asbesto-cement Pipes and Fittings for Water Line, Sizes and Forms	P 41-401 thru P 41-404
GERMANY	**DIN**
Drainage Installation of Reinforced Concrete	4281
RUMANIA	**STAS**
Sewer Layout in Populated Localities	1482
Sewer System for Cities	1481
Cast Iron Pipe Fittings for Sewer	1693, 1695/6/7/8

629.11 Land Vehicles, Transport Engineering

GERMANY	DIN
Bicycle Tires	7800
Dynamo, 112 mm Diameter Type	72413 B1.2
Dynamo, 125 mm Diameter Type	72414 B1.1,2
Electric Wiring for Automobile	72551, B1.3,4
Oil Pressure Switch for Automobile	75552
Hydraulic Brakes, Dimension and Tolerances	74200
Bicycle Wheel Spokes and Nipples	79526
Tires for Small Motorcycles	7810
Rims for Small Motorcycle Wheels	7824
Power Take-off and Drawbar Hitch location on Agricultural Tractors	9670
Lead-acid Batteries for Automobiles	72311,B1.1-4
NETHERLANDS	**N**
Registration Plates for Bicycles with Auxiliary Motor	1146
Registration Plate for Motorcycles	1147
Registration Plates for Tricycles and Automobiles	1148
RUMANIA	**STAS**
Tractors. Track Clips	1381

629.113 Motor Vehicles

CHINA	CNS
Automobile Pistons, Cylinders, Piston Rings, Pins	34,40,43,44, 70 D1,D4-6, D10
Spare Parts, Tolerances	36,38 D2,3
Automobile Springs	45,64,69 D7,8,9
Bolts for Connecting Rods, Cylinder Heads, Bearings, etc.	91 D11
GERMANY	**DIN**
Fuel Shut-off Valve	71401,B1.2
Oil Pump	71422,B1.1,2
Oil Tank	71423
Dynamos, 150 mm and 178 mm in Diameter	72415/6
Magnetos for One- and Two-Cylinder Motors	72431,B1.1
Fuses	72581
Rubber Grommets and Protective Caps	72613
Foot Switch	72761,B1.1
Lighting Circuit Switches	72763,B1.1,3
UNITED KINGDOM	**BS**
Brake Drums	26019
Clutch Fittings	26022
Discs for Flexible Couplings	26028
Universal Joint Flanges	26029

629.12 Ships and Shipbuilding

POLAND	PN
Side Type Fairleads	W-89127
RUMANIA	**STAS**
Rigging Screws. General	1107
Service Rowboat	1398
Pilot's Rope Ladders	1101/2/3
Hand Anchor Winch 0.7—2.0 ton Capacity	1401
Hand Winch for Anchor	1403

Ship Fittings: Stretching Turnbuckles, Classification 1104/6

UNITED KINGDOM **BS**

Bitts, Closed and Open Types 27007
Anchor Chains, with and without Swivel 27160
Chain Links and Shackles 27170, 27180

666 Glass and Ceramic Industry

CHINA **CNS**

Portland Cement 61 R1

GERMANY **DIN**

Wine Bottles 6096

MEXICO **DGN**

Vitrified Clay Tiles C-25
Concrete Block, Hollow C-26

RUMANIA **STAS**

Glass Bottles 1334
Glass Jars Used in Food Industry 1079
Burnt Clay Bricks, Double Pressed 1241
Refractory Radial Bricks for Lining Crucibles 1428
Window Panes 1506
Refractory Bricks for Cast Steel Caldrons 1580
Sand- and Emery-Paper 1581/2

667.4 Ink, Black Lead, Chalk

BRAZIL **IPT**

Red Ink for Writing 83
Ink for Rubber Stamp Pads 94

INDIA **IS**

Ink Powders and Tablets, Blue-Black and Red 219—1950
Fountain Pen Inks, Blue-Black and Red 220—1950
Fluid Ink for Registration and for Checks and Records 221—1950
Blue-Black Superior Fluid Ink for Writing 222—1950

MEXICO **DGN**

Blue-Black Ink R-11
Red Ink R-12

667.6/8. Paints, Varnishes, Lacquers, etc.

BRAZIL **IPT**

Gum-Lac 95

INDIA **IS**

Methods of Test for Thinners and Solvents for Paints 82
Specification for Turpentine for Paints 83
Specification for White Spirit for Paints 84
Methods of Test for Oil Pastes for Paints 85
Nine (9) Specifications for Oil Paste for Paints 86 thru 94
Nine (9) Specifications for Ready Mixed Paints, Brushing, Finishing, Oil Gloss, for General Purpose 117 thru 125
All to Sixty (60) Different Indian Standard Colors Identified by Nos.: 101-106, 169, 216-227, 267, 352-356, 358-364, 368, 410-414, 443-446, 448, 449, 451, 473, 537, 538, 540, 541, 557, 570, 628-635.
Six (6) Specifications for Oil Paste for the following Paints:
Exterior White 95
Interior White 96
Jointing Purposes, etc, White Lead 97
Zinc Oxide 98
Zinc Oxide Reduced 99
General Purpose, Black 100
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Red Lead, Brushing, Nonsetting, Priming 102
White Lead, Brushing, for Priming and General purposes 103
Zinc Chrome, Brushing, Priming, for Use on Aluminum and Light Alloys 104
Priming, Brushing, for Enamels, for Use on Metals 105
Priming, Brushing, Plaster to Indian Standard Color No 361—Light Stone 109
Grey Filler, Brushing, for Enamels, for use over Primers 110
Undercoating, Brushing, Exterior, to Indian Standard Colors Nos. 101, 216, 352, 358, 443 and 632 111
Undercoating, Spraying, Exterior, to Indian Standard Colors Nos. 101, 216, 352, 358, 443 and 632 112
Undercoating, Brushing, Interior, to Indian Standard Colors Nos. 101, 216, 352, 358, 443 and 632 113
Undercoating, Spraying, Interior, to Indian Standard Colors Nos. 101, 216, 352, 358, 443 and 632 114
Undercoating, Brushing, Exterior, Matt Finish, to Indian Standard Colors Nos. 352 and 632 115
Undercoating, Spraying, Exterior, Matt Finish, to Indian Standard Colors Nos. 352 and 632 116
3 Specifications for Ready Mixed Paint, Exterior, for General Purpose to Indian Standard Color of:
Middle Graphite and Dark Graphite 126
White 127
Black 128

Specifications for Ready Mixed Paint, Brushing, Finishing, Interior Oil Gloss, for General Purpose, to 39 Different Indian Standard Colors, identified by Nos. 101-104, 169, 216-219, 352-354, 358-364, 410, 443/4, 628-635 129
Specification for Ready Mixed Paint, Spraying, Finishing, For Railway Wagon Stock to Indian Standard Color No. 446, Red Oxide 130
Specification for Ready Mixed Paint, Spraying, Finishing, For Railway under-Frame, Black 131
Specification for Ready Mixed Paint, Spraying, Exterior, Oil Gloss, for General Purposes, to 27 Different Indian Standard Colors identified by Nos. 101-104, 216/7, 224/5/6, 352-355, 358/9, 361, 364, 410, 412, 444, 446, 538, 541, 557, 631/2 and Black and White 132
Specification for Enamel, Brushing, Interior 133
Specification for Enamel, Spraying, Interior 134
Specification for Ready Mixed Paint, Brushing, Matt Finish, Interior, to 30 Indian Standard Colors Identified by Nos.: 101-104, 216/7, 219, 352/3/4, 358-364, 410, 443/4, 628-635 137
Specification for Ready Mixed Paint, Marking, for Packages and Petrol Containers 138
Specification for Ready Mixed Paint, Marking, Quick Drying, for Marking with Rubber stamp 139
Group of Four Standard Specifications for Ready Mixed Petrol Resisting Paints for Exterior Painting of Containers, (Colors as required), i.e.
Brushing, Air-drying Paint 140
Spraying, Air-drying Paint 141
Brushing, Stoving Paint 142
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Slushing, Air-drying Paint 145
Brushing, Stoving Paint 146
Slushing, Stoving Paint 147
Brushing, Finishing, Stoving, Enamel, Color as Required 150
Spraying, Finishing, Stoving, Enamel for General Purposes, Color as Required 151
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Brushing Acid and Alkali Resisting, Lead-free, for General Purposes, to Indian Standard Colors 157
Brushing, Bituminous, Black, Lead-free, Acid, Alkali, Water and Heat Resisting for General Purposes 158

UNITED KINGDOM **BS**

Standard specifications (government purchasing series) for bronze green paint for army vehicles Gp3-1950

More Decisions on Unusual Injuries

The following interpretations have been handed down by the Committee of Judges of ASA Sectional Committee Z16 on accident statistics. They serve as a guide to companies who want to know how to count injuries due to unusual accidents in their safety record.

The American Standard Method of Compiling Industrial Injury Rates, Z16.1-1945, offers generally accepted rules for keeping track of a company's safety record. Monthly compilation of a company's accident toll shows at a glance when some change in operations or some unforeseen new hazard has caused a jump in the injury rate. Immediate action then can be taken to eliminate the hazard.

Safety engineers are invited to obtain interpretations of the standard by sending the facts on doubtful cases to the American Standards Association. Reprints of all the published decisions can be obtained from ASA.

CASE 114. In preparing to unload a truck, an employee pulled an aluminum bridge plate off the truck. His foot slipped and he fell, causing the bridge plate to fall on his right leg. He suffered abrasions and contusions. He was treated by the plant hospital immediately, and continued to report at regular intervals. Approximately 9 days after the date of injury only a small scab remained on the right leg, and dry dressing with zinc sterate was applied.

On the fourteenth day, the employee reported to First Aid with swelling noticeable at both knee and ankle of the injured leg and was advised to use magnesium sulphate sock at home. On the following day swelling had increased somewhat, the employee was hospitalized and his condition was diagnosed as infection of the right leg. However, at no time was this infection localized around the area of the wound, nor did the employee feel any pain after the initial healing of the wound. On the day that the employee entered the hospital, he stated that he was allergic to adhesive tape and had never been able to use it. At the hospital he further stated that he was allergic to penicillin and sulfa drugs; however, this statement was not made until some of these drugs had been used in treatment of his case.

Within several days after hospitalization, the employee was experiencing swelling, inflammation, and pain at every point at which he had had any damaged tissue during the past several years. In fact, due to his multiple allergies, he could not be treated with any of the standard antibiotics customarily used. The doctor finally limited treatment to "Scarlet Red" and "Tyroderm" ointments.

Throughout this ordeal the employee never experienced any pain in the area which had originally been injured. The employee finally recovered and returned to work on the seventeenth calendar day after hospitalization.

The doctor who treated the case stated that although it could not be determined definitely, it was his belief that the infection was due to an allergy to the drugs used in the treatment of the original injury.

The committee agreed that this case came under 3.6.1 of the standard and that it should not be included in the rates.

CASE 115. A salesman made his headquarters at the company plant but did a considerable amount of travelling, frequently by train or airplane. When these were not convenient he requisitioned a company automobile from the plant. In this particular case he had a call to make Friday afternoon near his home approximately 80 miles from the plant and an early call Monday morning approximately 80 miles beyond his home or 125 miles from the plant. He felt that it would be much easier for him and would make no particular difference to the plant if he took the car over the week-end strictly for business use.

On his way home Friday night, a noise developed in the front end of the car; however, it was late and he continued on home. In the morning, he had in mind taking the car to the garage; however, through curiosity, he lifted the hood to see if he could find out what was making the noise and be in a position to tell the garageman what needed to be fixed. He turned on the ignition and started the car so that he could hear the motor; then he turned off the ignition, got out of the car, and started to examine the fan belt, etc. While he was holding the fan belt and pulling it around, the motor suddenly started and pulled his fingers in between the belt and pulley. This crushed the second finger of his left hand so that it required amputation at the first joint.

There was some question as to whether he had accidentally left the ignition key in the "on" position or whether his five-year-old daughter, playing in the yard, may have climbed into the car and turned on the switch. There was no company policy as to whether an employee should or should not attempt to repair a car. The company did not believe the salesman should be condemned for trying to determine the cause of the noise.

The committee came to the conclusion that this injury should be included in the rates. Although this employee was on his own time and although it was not part of his regular job, it was believed that he was performing certain work in the interests of his employer and this injury therefore arose out of his employment.

CASE 116 AND CASE 117. No decision because of lack of sufficient information.

CASE 118. At 10:50 p.m., a streetcar operator was "laying over" at the outer terminus of his route. While he was seated at his post in the front cab of the car with the doors closed, a Negro rapped on the door. The operator thought he wished to board the car and he opened the door. The Negro boarded the car, pulled out a gun, relieved him of his money and fired twice, wounding the operator in the right leg below and above the knee. The operator was confined to a hospital and lost some time as a result of this injury. The company argued that the hazard of being shot at was not occupational unless it could be reasoned that the employer was required to supply protection against thugs and murderers.

The committee came to the conclusion that this injury not only occurred in the course of employment but also arose out of employment, and therefore should be included in the rates. One of the members commented as follows:

"The fact that everyone knows that street-car operators must carry money and that they have no means of protection makes them much more liable to holdup than individuals of the general population. This is particularly true when their work requires them to go to isolated places which are particularly suited for holdups."

CASE 119. Injured was employed as a rigger in a chemical plant. With a number of other men he was assigned on Tuesday to clean tubes in a heat exchanger which was located in an open area without a roof or other protection from the elements. While the men were eating lunch, a sudden heavy rainstorm occurred. Assuming that the rain was getting the tubes wet, the injured ran out to the heat exchanger with the intention of covering it with a tarpaulin.

In order to get to the top of the heat exchanger, he climbed over a standard guard rail. He swung his right leg over the top rail and brought his right foot to rest on the lower rail on the opposite side from his body. He then swung his left leg over the top rail, throwing all of his weight on his right foot. His right foot slipped and he fell forward and down. At the time of the fall his right foot was 21 inches off of the floor level.

In falling, he struck the back of his head on an insulated steam pipe. He arose, covered the heat exchanger with a tarpaulin as he had intended, and reported to the dispensary where the attendant found no injury to treat and merely recorded the case after completing the examination. The injured returned to his work and completed his shift without any apparent bad effects of the fall.

The following morning, Wednesday, he reported for work as usual and then went to the dispensary for diathermy treatment for soreness in the upper back and neck. After treatment he returned to and performed his regular job. In the afternoon he returned to the dispensary because the

soreness continued to bother him. He also complained of a headache. He was sent to a doctor for examination. The doctor could find no evidence of brain concussion but advised rest, ice bags, and medication for several days.

On the following day, Thursday, the injured reported to the dispensary with a note from the doctor describing his findings and recommendations as noted in the foregoing paragraph. The headache continued and the man was sent home about 10:30 a.m. On the next day he reported into the dispensary and was sent to the Machine Shop where he performed an established job but not his own. In the afternoon he was sent to the doctor again on an appointment. No serious injury was found and the doctor found the man fit to work.

Under the provisions of paragraph 3.4.3 was it permissible to consider Thursday on which the injured did no work as an observation period for a blow on the head?

The committee decided that this should be counted as an industrial injury with one day of lost time. The members pointed out that the one day of lost time was for the purpose of rest and medication, and as a curative period rather than just as an observation period, as mentioned in 3.4.3 of the code.

CASE 120. A company had a plant on the eighth and ninth floors of a large office building. One of its girl employees, coming to work on a rainy morning, found the street door was hard to open because it was partially stuck. In attempting to push it open she slipped and fell, injuring her arm and elbow. The injury caused the girl to lose several days from work. At the time of the injury she had not punched in her clock card, which was located on the eighth floor.

The committee decided that this case should not be included in the rates. The members remarked that this was similar to Case No. 43.

CASE 121. This case presented a rather puzzling situation with respect to time charges for multiple injuries.

The specific situation was as follows: In a single accident, a man lost the sight of one eye completely and suffered a 10 percent impairment of vision in the other eye. What should be the time charge?

The company commented: "The fact that the time charge for the loss of one eye is 1,800 days clearly indicates that the people who developed the original time charges did not consider the loss of one eye equivalent to 50 percent of the loss of both eyes. Furthermore, 10 percent loss of vision is not very much in terms of ability to see. It might seem reasonable, therefore, to charge 1,800 days for the loss of one eye, and 180 days for the loss of the other eye or a total of 1,980 days.

"On the other hand, the code emphasizes that, for permanent impairments affecting more than one part of the body, the total time charge shall be the sum of the time charges for the individual body parts impaired, except where specific time charges are provided in the code for combinations of impairments. This exception suggests the possibility that the impairment should be considered equivalent to a percentage of total impairment, that percentage being figured in the usual way recommended in the code; namely, by adding the two percentages and dividing by two. On this method of calculation, the time charge should be 55 percent of 6,000 days or 3,300 days. The first method has the disadvantage that in case of almost total loss of both eyes, the precedent established might result in relatively low time charges. For example, suppose a person lost 100 percent of one eye and 95 percent vision of the other eye. The first method would yield a time charge of only 3,510 days, whereas a time charge very close to 6,000 days, if not 6,000 days, would be necessary."

The committee discussed this case in considerable detail. After reviewing all four of the notes at the end of the Table of Time Charges in 4.3, the committee believed that the Z.16 committee, in preparing the revision, had not foreseen the question presented in this case. It did not believe that any of the four notes properly cover such a case. In lieu of any specific mention in the code, the committee suggested that where two eyes are involved to an extent less than permanent total disability, then the percentage of loss of each eye should be determined. The larger of these two percentages should be applied to 1,800 days, which is the time charge for total loss of one eye, and the percentage loss of the other eye should be applied to 4,200 days (that is, the difference between the time charge for loss of one eye, 1,800 days, and the loss of both eyes, which is considered a permanent total disability of 6,000 days), and the sum of these two charges should be added to obtain the correct time charge for the injury.

In arriving at this decision, the committee agreed that total loss of one eye is probably far less of a handicap than 50 per cent loss of sight of each eye. One member reported that in certain discussions with medical people in the past, he had heard it suggested that where both eyes are involved, the loss in the second eye is probably about twice as serious as a similar loss in the first eye.

In the case in question, there had been total loss of one eye and 10 percent loss of the second eye, making the total time charge in this case 2,220 days.

CASE 122. A janitor was employed in a hydroelectric plant located 7 miles from the city and 2 miles from the nearest public transportation. His scheduled hours of work were from 8 a.m. to 4 p.m. In order to obtain transportation to the plant, it was the practice of the janitor to meet the plant superintendent at the company mailroom in the city where the mail for the plant was picked up and carried in the company vehicle assigned to the plant superintendent. On the morning of the injury, the janitor met the superintendent at the mailroom at 7:30 a.m. In lifting and carrying packages of mail weighing 40 to 50 pounds, he sustained a disabling back injury. It was noted that this case did not occur during the employee's scheduled hours of work; therefore, it did not seem to be clearly covered by paragraph 2.1.1 ". . . voluntary work undertaken by them while on duty with the intention of benefiting their employer."

The committee decided that this injury should be included in the industrial injury rates. The members agreed that this employee had been doing voluntary work for the benefit of the employer and they did not believe that the injury should be excluded simply because it did not occur during the employee's regular schedule of hours of work.

CASE 123. A construction crew was engaged in the erection of a substation 8 miles from the nearest community, in which lodging was obtained. The skilled employees were required to meet at a restaurant or at a garage in the community 8 miles from the job site at 8:00 a.m. They traveled from the assembly point on company time in the morning and returned to the community in the afternoon on their own time. The company pick-up truck was available to provide transportation to the job site. On the morning in question, because of the low temperatures, several employees elected to travel to the job site in their own, or fellow-employees', passenger cars in order to avoid exposure to the cold which they would have been subjected to had they ridden in the open pick-up truck.

One private passenger vehicle driven by one of the employees, and carrying another employee as a passenger, was struck and wrecked by another vehicle on the highway. The employee riding as a passenger received a disabling injury. Although on this particular morning the supervisor did not give specific permission to these men to ride in private passenger cars, this procedure had been followed in a number of instances and had received the tacit approval of the supervisor.

The committee decided that the employee in this case had been on company time and the management had condoned the use of private cars for transportation—therefore, this case should be counted in the rates.

CASE 124. An oil company bulk plant helper, 53 years of age, had had 23 years of service with this company. The occurrence was on February 6, at about 10 a.m., and was immediately reported to the foreman. The employee's statement follows:

"I have worked in the cooperage shop since beginning employment with the company. The bulk of my work is stencilling—sometimes running the barreling machines—none of my regular work is very heavy.

"On February 6, in the forenoon, we were short of help and I was asked to help load a dray truck with steel gasoline drums. Two men worked with me. The drums seemed to be very heavy and filled with something, possibly ice. The footing was poor and sloppy. One man and I threw the drums up on the dray, and the other moved them forward. These steel drums weigh up to 117 lbs. when empty. We put on about 100 of

these barrels and were getting ready to put a few more on the tailgate. I stepped back to get out of the way of any falling drums and felt a sharp pain around the calf or foot of my right leg. This was about 10 a.m. I went back over to the cooperage house and the pain seemed to get better. I have had no trouble with my right foot or leg before and no injury except dropping a bar on my right toes 2 or 3 years ago."

The medical report submitted by the company physician confirmed the patient's statement of the occurrence as follows: "While loading drums felt pain in right calf. Foot was in strained position during this procedure. Next day, foot felt weak and dead-like."

The doctor's findings in the initial examination were as follows:

"Right foot is cold, blanched. There is some apparent muscular weakness at the ankle, particularly in dorsiflexion. There is tenderness to pressure over the leg. The peripheral arteries cannot be palpated on either foot. This is apparently a case of strain coupled with circulatory disturbance."

The employee was referred to a specialist and gave substantially the same history as noted above; also stating that he had no previous history of pain in his legs. The specialist who examined him reported the man to be in seemingly excellent condition, cooperative and honest in reply to questions. This specialist's conclusions showed a diagnosis as follows:

"This man has a moderately severe peripheral arteriosclerosis involving both lower extremities. In addition, on the left he has sufficient thrombosis to cause almost complete obliteration popliteal."

The specialist's opinion in the case was:

"It is, of course, obvious that this man has had the arterial sclerosis for some time. It is probable that his exertion on February 6, aggravated this condition, resulting in an increase in the blocking of the arteries, and caused this present diability."

The committee called attention to the specialist's opinion that the employee's exertion had aggravated his previous condition and agreed that this injury should be included in the rates in accordance with 2.3 of the standard.

CASE 125. An employee was found to have some form of lung pathology during a routine X-ray examination of all employees in the plant. He was the only employee found to have this particular questionable lung pathology.

Further X-ray pictures were taken and an effort was made to secure a final diagnosis of the case; however, it was not until five months later that a diagnosis of silicosis was confirmed. The physician who made the final diagnosis gave as his opinion that the man had a 15 percent permanent partial disability. No time had ever been lost by the employee and he was still at work in the plant.

The question at issue was primarily to what date this case should be charged as a permanent partial disability. The secondary question was raised as to whether the case should be chargeable at all since the man was still working.

The committee agreed that the date for charging this injury should be the date that this injury was first determined to be of occupational origin. In this case it would be the date at the end of five months when a diagnosis of silicosis was confirmed. The committee called attention to the fact that management had accepted the medical opinion of 15 percent permanent total disability and therefore agreed that the injury should be included in the rates with a time charge of 15 percent of total disability, namely 900 days.

IH Cashes In

(*Continued from page* 272)

part number and description taken from the standard sheets. This practice accelerates and simplifies both production and purchase. Only in case of necessity does a draftsman resort to making a drawing for a "special" part which has to be manufactured or bought "per blueprint" and for that reason is usually more expensive than a standard part.

The value of parts standard numbers to various areas of the company's operations is illustrated by the following typical example. When the manufacturing department is authorized to manufacture 10,000 harrows, the IBM card for harrows is consulted. (Harrows are used here as symbolic of peacetime production; the procedure described applies to any other product, whether for a government order or to supply an agricultural machinery distributor.) The card carries the bill of material, including standard parts numbers. From it can be figured how many discs, how many rods, how many bolts and nuts will have to be ordered to supply the 10,000 harrows. All parts will be ordered by number. Manuals for use by the customer in the field, and repair instruction books will identify all parts by the standard part number. This number will mean the same in the General Office in Chicago, and in any of the IH factories throughout the world.

The application of standardization in this complex manufacturing and service organization has simplified its operations. As a result, the cost of those steps which of themselves neither cut metal nor put pieces together but which do facilitate those operations has been reduced. At the same time, the efficiency of the operations themselves has been increased.

As in World War II, now again in the current emergency, IH finds itself called upon, on the one hand to provide the essential equipment by which farmers of this country and of our Allies can increase the output of essential foodstuffs, on the other, to maintain the company's manufacturing know-how and engineering competence as demanded by various branches of the Armed Services for the production of purely military goods. In carrying out both these functions, standardization is playing and will continue to play an important part.

Electric Plant

(*Continued from page* 281)

"In group C," the authors explain, "it had been found, for example, that manufacturers had to produce circuit breakers in a large range of ampere and interrupting ratings to meet individual orders. This was costly because of custom-building procedures needed." By developing the American Standard Preferred Ratings for Power Circuit Breakers, C37.6-1949, ratings were limited to those in most general demand. "This code has materially reduced over-all cost of manufacture," Messrs Schick and Nevins declare.

More than 1000 drawings made for this Barbadoes project conformed to the American Standards on graphical symbols, abbreviations, and drawing practices.

The standards referred to in this digest are all American Standards representing coordination of viewpoint of the various groups concerned. In addition, the Philadelphia Electric Company used standards and specifications of different agencies, including the ASME Boiler Code, for example, and the Commonwealth of Pennsylvania Codes and Regulations.

What's New on American Standard Projects

Safety in the Construction Industry, A10—

Sponsors: American Institute of Architects; National Safety Council

Howard H. Warzyn, National Safety Council, has been named to serve as secretary of this committee.

Plumbing Code, A40—

Sponsors: American Public Health Association and American Society of Mechanical Engineers

The U.S. Department of Commerce and the Housing and Home Finance Agency, and also the American Public Health Association and the American Society of Mechanical Engineers, have recently published a "Report of the Coordinating Committee for a National Plumbing Code." This report is now being circulated widely. If found acceptable by trade and technical groups and governmental agencies, it will be submitted to ASA for approval as an American Standard.

The Coordinating Committee was set up something over two years ago under the chairmanship of F. M. Dawson, with Vincent T. Manas as Executive Secretary. Its membership includes: American Public Health Association, American Society of Mechanical Engineers, American Society of Sanitary Engineering, Building Officials Conference of America, Conference of State Sanitary Engineers, National Association of Master Plumbers, Uniform Plumbing Code Committee, and Western Plumbing Officials Association.

The assignment of the Coordinating Committee is to harmonize the plumbing codes prepared by the Uniform Plumbing Code Committee, BOCA, Western Plumbing Officials Association, the code developed under the procedure of ASA, and the proposed code under development by the American Society of Sanitary Engineering. The Committee is making use of results obtained in recent research at the National Bureau of Standards, the University of Iowa, the University of Illinois, the U.S. Public Health Service Environmental Center at Cincinnati, and other laboratories.

Copies of the report are available from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 50 cents a copy. Copies of the ASME Edition can be obtained for comment from the American Society of Mechanical Engineers, 29 West 39 Street, New York 18, N. Y.

Electrical Measuring Instruments, C39—

Sponsor: Electrical Standards Committee

The subcommittee on Electrical Recording Instruments has completed the writing of a proposed standard which will shortly be presented to the C39 committee for letter ballot.

Electrical Equipment in Coal Mines, M2—

Sponsors: American Mining Congress; U. S. Department of Interior, Bureau of Mines

Reconsideration recommended by the Board of Review last winter of the proposed revision of the American Standard for Safety in the Installation and Operation of Electrical Equipment in Coal Mines, has been completed by the Mining Standardization Correlating Committee and the sectional committee.

The scope of the project has been modified to indicate clearly that electrical installations concerned with coal mining, above ground as well as under ground, are to be included.

The sectional committee has studied the questions raised by certain ASA groups and has editorially revised several sections of the proposed standard in order to avoid misunderstandings regarding the application of the National Electrical Code, the National Electrical Safety Code, and the new proposed American Standard Safety Code for Installing and Using Electrical Equipment in and about Coal Mines. The proposed standard, editorially revised from an earlier draft, has been submitted to ASA for approval. Copies are available at the ASA office.

Standards for Motion Pictures, PH22—

Sponsor: Society of Motion Picture and Television Engineers

The following report is reprinted from the *Journal of the Society of Motion Picture and Television Engineers*, June 1951:

"The Engineering Committee on Optics under the chairmanship of R. Kingslake has been preparing in recent months a Proposed American Standard for the Aperture Calibration of Motion Picture Lenses. The purpose of this standard is to define a suitable method for the measurement and marking of the transmittance of photographic objectives, so that the user may have a more reliable guide to the exposure resulting from a given lens opening than can be derived from the present-day f/numbers.

"One very good method for doing this is described in U.S. Patent 2,419,421, 'Method of Calibrating Lenses with Respect to Effective Optical Speed,' granted to L. T. Sachtleben and assigned to the Radio Corporation of America. The Optics Committee valued this method sufficiently to include it in the present Proposed Standard, even though the patent might have proved a bar to its universal availability, and so to its ultimate acceptance as an American Standard.

"Recognizing this situation, the Radio Corporation of America has generously agreed to grant a paid-up license under the patent mentioned for the sum of only $10.00. This nominal fee makes the calibration method easily available to anyone interested in using the present proposal, and also facilitates the retention of the method in the ultimate American Standard. R. H. Heacock, RCA Product Manager, Theatre Equipment, outlines the following procedure for securing a license under the Sachtleben patent:

" 'If you will kindly arrange to let me know the full name of the companies interested in a license of this kind together with the name of the State in which the corporation, partnership, or proprietorship, as the case may be, is registered and the address at which the company is located, we would be glad to prepare and forward to them an executed copy of the Agreement.

" 'We hope that the Industry will be able to make use of this patent to good advantage.' "

NOTE: Proposed American Standards prepared by SMPTE's Engineering Committee are submitted to ASA Sectional Committee PH22 on Motion Pictures for recommendation to the American Standards Association.

• • **Modern Industry's second conservation forum** (Philadelphia, May 31) came up with a number of specific proposals. First, urge engineering societies, engineering schools, and local authorities to eliminate overdesign by up-to-date changes in allowable stresses and other engineering concepts. Second, write the Conservation Coordinating Committee, Defense Production Administration, Washington, D. C., with specific suggestions for conservation. Third, implement the use of statistical quality control by making the quality control engineer responsible directly to the president or vice-president. Fourth, organize a local committee to develop a conservation program in the Philadelphia area to serve as a pattern for possible use throughout the country.

The forum was attended by some 60 industrial executives in the Philadelphia area. Principal speakers included Howard Coonley, chairman of the Conservation Coordinating Committee of the Defense Production Administration and Post-War Chairman of the Executive Committee of the American Standards Association; Brigadier General Donald Armstrong, USA (Ret), president of the U.S. Pipe and Foundry Company and former Director of ASA; and Robert W. Walcott, chairman of the Board of the Lukens Steel Company.

The Man Who Made Standard Time

BEFORE Sunday, November 18, 1883, every community in the United States had its own local time, and was proud of it. Worse, each of the then 500 railroads had *its* own time, ran on it stubbornly, and scoffed at all the other roads and their times.

So a traveller from Maine, arriving in Buffalo, might find his watch reading 12:15, the Buffalo city clock reading 11:40, the New York Central assuring him it was 12 noon, and the Lake Shore Railroad asserting it was 11:25. Frequently two differing clocks would be hanging side by side. A watch was a delusion, a time table a confusion 500 times compounded.

Charles Ferdinand Dowd, principal of the Temple Grove Ladies Seminary at Saratoga Springs, New York, undertook to do something about this. He liked order, and was offended by the nation's "pathless wilderness of times." Having neither money nor leisure for a national crusade, he went into this matter as "a diversion."

In his own head, he thought up the idea of four time belts across the nation, using Greenwich time as a base.

Reducing theory to facts, he set about calculating the correct local time, on longitude, for each one of the 8,000 stations on the railroads. These findings he published in 1870, in a pamphlet, "System of National Time for Railroads." This is now a collector's item, because it was one of the truly revolutionary documents in American history.

He mailed this pamphlet widely to railroad executives. Year after year he went and talked at their conventions. From the first, the railroad groups acknowledged the value of the Dowd plan; but they were engaged in bitter rate wars, and also "fast train wars," and a road's own time was a great help in clipping a few minutes off a competitor's train time between cities.

It took Dowd 20 years to win them over. In the end, it was the demand of an exasperated public which turned the trick. Finally, in 1883, the American Railway Association adopted the new plan. The whole country followed easily enough. It is curious that so vital a change was made with no official action at all, no Congressional bill, and no Federal approval.

On Saturday, November 17, 1883, the last day under the old system, "when the sun reached the meridian of the eastern border of Maine, the clocks began their jangle for the hour of noon and kept it up in a drift across the country for four hours, like incoherent cowbells in a wildwood," as Harper's Weekly told the story. 'But on Monday the 19th, no clock struck for this hour till the sun reached the 75th Meridian. Then all the clocks on the continent struck together, those in the Eastern striking 12, those in the Central Belt striking 11, those in the Mountain striking 10, and those in the Pacific striking 9. Time tables everywhere became intelligible."

The only casualty seems to have been Navy men, ashore on leave in New York City. Ordered to return to their ships by the sunset boat, which operated on Navy time, they arrived at the pier on the new standard time, to find that the boat had left 3 minutes 58½ seconds before.

Dowd never made a cent out of his labors. On the contrary, he put his own money into them. Not the least strange part of the whole strange story was the fact that this man who had made every railroad train run "on time" was killed in 1904—by a railroad train.

—Roger William Riis

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AMERICAN STANDARDS

Status as of August 1, 1951

Legend

Standards Council — Approval by Standards Council is final approval as American Standard; usually requires 4 weeks

Board of Review—Acts for Standards Council and gives final approval as American Standard; action usually requires 2 weeks

Correlating Committees — Approve standards to send to Standards Council or Board of Review for final action; approval by correlating committee usually takes 4 weeks

Building

American Standard Just Approved—

Building Code Requirements for Reinforced Concrete, A89.1-1951 (Revision of ACI 318-47; ASA A89.1-1948)

Sponsor: American Concrete Institute

American Standards Just Published—

Methods of Testing Gypsum and Gypsum Products (ASTM C26-50; ASA A70.1-1951) $.25

Specifications for Gypsum Plasters (ASTM C28-50; ASA A49.3-1951) $.25

Specifications for Gypsum Lath (ASTM C37-50; ASA A67.1-1951) $.25

Specifications for Gypsum Molding Plaster (ASTM C59-50; ASA A49.4-1951) $.25

Specifications for Gypsum Sheathing Board (ASTM C79-50; ASA A68.1-1951) $.25

Sponsor: American Society for Testing Materials

Electrical

American Standards Just Published—

Brushes for Electrical Machines, C64.1-1950 (Revision of C64-1935) $1.50

Sponsor: National Electrical Manufacturers Association

Terminology for Piezoelectric Crystals (49 IRE 14.S1), ASA C16.17-1951 $.80

Methods of Testing Vehicular Communications Receivers (49 IRE 16.S1), ASA C16.18-1951 $.50

Methods of Testing Amplitude-Modulation Broadcast Receivers (48 IRE 17.S1), ASA C16.19-1951 $1.00

Methods of Testing for Effects of Mistuning and Downward Modulation, (49 IRE 17.S1), ASA C16.12a-1951, Supplement to American Standard Methods of Testing Frequency Modulation Broadcast Receivers, (47 IRE 17.S1), ASA C16.12-1949 $1.25

Methods of Measurement of Television Signal Levels, Resolution, and Timing of Video Switching Systems (50 IRE 23.S1), ASA C16.20-1951 $.70

Methods of Testing Antennas (IRE-1948) ASA C16.11-1949 $.75

Methods of Testing Television Receivers—Monochrome Service, Six-Megacycle Channel (IRE-1948) ASA C16.13-1949 $1.00

Color Codes: Numerical Values, Decimal Multipliers and Tolerances for Components for Electronic Equipment (RMA GEN-101) ASA C16.14-1949 $.35

Preferred Values for Components for Electronic Equipment (RMA GEN-102) ASA C16.15-1949 $.35

Vibrating Interrupters and Rectifiers for Auto Radio, Frequency 115 Cycles (RMA REC-113) ASA C16.16-1949 $.35

Sponsor: Institute of Radio Engineers

American Standard Just Approved—

Acoustical Terminology, Z24.1-1951

Sponsor: Acoustical Society of America

In Correlating Committee—

Specifications for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft (ASTM B8-50; ASA C7.8)

Specifications for Soft Rectangular and Square Bare Copper Wire for Electrical Conductors (ASTM B48-49; ASA C7.9)

Specifications for Hard-Drawn Copper Alloy Wires for Electrical Conductors (ASTM B105-49; ASA C7.10)

Specifications for Figure-9 Deep-Section Grooved and Figure-8 Copper Trolley Wire for Industrial Haulage (ASTM B116-49; ASA C7.11)

Tentative Specifications for Rope-Lay Stranded Copper Conductors Having Bunch-Stranded Members, for Electrical Conductors (ASTM B172-50T; ASA C7.12)

Tentative Specifications for Rope-Lay Stranded Copper Conductors Having Concentric-Stranded Members, for Electrical Conductors (ASTM B173-50T; ASA C7.13)

Tentative Specifications for Bunch-Stranded Copper Conductors for Electrical Conductors (ASTM B174-50T; ASA C7.14)

Specifications for Lead-Coated and Lead-Alloy-Coated Soft Copper Wire for Electrical Purposes (ASTM B189-50; ASA C7.15)

Specifications for Cored, Annular, Concentric-Lay-Stranded Copper Conductors (ASTM B226-50; ASA C7.16)

Specifications for Hard-Drawn Copper-Covered Steel Wire (ASTM B227-49; ASA C7.17)

Specifications for Concentric-Lay-Stranded Copper-Covered Steel Conductors (ASTM B228-49; ASA C7.18)

Specifications for Concentric-Lay-Stranded Copper and Copper-Covered Steel Composite Conductors (ASTM B229-49; ASA C7.19)

Tentative Specifications for Hard-Drawn Aluminum Wire for Electrical Purposes (ASTM B230-50T; ASA C7.20)

Specifications for Concentric-Lay-Stranded Aluminum Conductors, Hard-Drawn (ASTM B231-49; ASA C7.21)

Tentative Specifications for Concentric-Lay-Stranded Aluminum Conductors, Steel-Reinforced (ACSR), (ASTM B232-50T; ASA C7.22)

Specifications for Rolled Aluminum Rods (EC Grade) for Electrical Purposes (ASTM B233-49; ASA C7.23)

Method of Test for Resistivity of Electrical Conductor Materials (ASTM B193-49; ASA C7.24)

Specifications for Hard-Drawn Copper Wire (originally ASTM B1-40; ASA H4.2-1941) (now ASTM B1-49; ASA C7.2)

Specifications for Medium-Hard-Drawn Copper Wire (originally ASTM B2-40; ASA H4.3-1941) (now ASTM B2-49; ASA C7.3)

Specifications for Tinned Soft or Annealed Copper Wire for Electrical Purposes (originally ASTM B33-46; ASA H4.4-1947) (now ASTM B33-50; ASA C7.4)

Specifications for Bronze Trolley Wire (originally ASTM B9-46; ASA H4.5-1947) (now ASTM B9-49; ASA C7.5)

Specifications for Copper Trolley Wire (originally ASTM B47-46; ASA H4.6-1947) (now ASTM B47-49; ASA C7.6)

Specifications for Hot-Rolled Copper Rods for Electrical Purposes (originally ASTM B49-41; ASA H4.7-1942) (now ASTM B49-50; ASA C7.7)

Sponsor: American Society for Testing Materials

Reaffirmation Requested—

American Standard Specifications for Soft or Annealed Copper Wire (ASTM B3-45; ASA H4.1-1947) (now ASA C7.1)

Gas Burning Appliances

American Standards Just Approved—

Approval Requirements for Central Heating Gas Appliances, Z21.13.1-1951 (Revision of Z21.13-1945 and Z21.13 a and b-1950)

Approval Requirements for Gas Unit Heaters, Z21.16.1-1951 (Revision of Z21.16-1940, R1947)

Listing Requirements for Automatic Pilots, Z21.30.1-1951 (Revision of Z21.30-1940, R1947)

Addenda to American Standard Approval Requirements for Gas Water Heaters, Z21.10-1950, Z21.10-1951

Sponsor: American Gas Association

Graphical Symbols

In Correlating Committee—

Graphical Symbols for Single (One) Line Electrical Engineering Diagrams, Z32.1.1

Sponsors: American Institute of Electrical Engineers; American Society of Mechanical Engineers

Motion Picture

American Standard Just Approved—

Sound Transmission of Perforated Projection Screens, PH22.82-1951

Sponsor: Society of Motion Picture and Television Engineers

Safety

In Correlating Committee—

Code for Forging and Hot Metal Stamping, B24.1 (Revision of B24-1927)

Sponsors: Drop Forging Association; National Safety Council

TV Tackles Rayon

(*Continued from page 276*)

low at the Mellen Institute of Industrial Research, University of Pittsburgh, explained that the purpose of the proposed American Standards is to help find the proper end-use for the different types of rayon fabrics.

He illustrated his points by showing a raincoat made of a light, porous material—too porous to hold a water-repellant finish.

"We have a separate specification for each end-use," Dr Labarthe explained. "If the standard had been followed, this porous material would never have been used in making a raincoat."

To help the consumer recognize fabrics that meet the American Standard requirements for the garment or household product for which it has been used, Dr Labarthe said that it has been suggested that permanent labels of different colors and tags carrying detailed instructions be placed on each garment or item of home furnishings made of rayon.

Miss Ardenia Chapman, Dean of the School of Home Economics at Drexel Institute of Technology, Philadelphia, and member of ASA's Board of Directors, explained the American Standards Association and its "all-party-at-interest" procedures.

Discussion at a press conference following the show indicated that many consumer complaints now undoubtedly die with the retailer's clerk or adjustment manager. A more effective pipeline for complaints between consumer, retailer, and manufacturer might help to eliminate many problems, one panel member said.

News Briefs

• • **It may take 20 years** to accomplish even partial standardization of the military items being manufactured by countries in the North Atlantic Treaty Organization, *Life* estimates in an article entitled "Headache: Standardization" (July 1951).

"One of the most complex problems facing the G-4s of Eisenhower's armies, the men who deal with supplies, is that of utilizing the available old weapons and coordinating the manufacture of new ones," the article points out. The problem is to supply 12 armies which use 33 types of machine guns and 90 types of the heavy guns.

The answer to this problem "is some degree of standardization of arms, but meshing a dozen different industrial plants makes this neither a quick nor a simple solution," the article declares.

"A measure of the problem is the difficulty encountered in the attempt to standardize British and American screw-thread sizes. It took 30 years just to negotiate an agreement and now three years later there is only a 50 percent standardization in so seemingly simple a field," the magazine comments.

TYPE OF WEAPON	PRESENT	FUTURE
RIFLES	25	3
CARBINES	7	2
SUBMACHINE GUNS	14	5
PISTOLS	23	2
MACHINE GUNS	33	3
BAZOOKAS	4	3
MORTARS	20	12
RECOILLESS RIFLES	3	3
LIGHT ARTILLERY	60	3
HEAVY ARTILLERY	90	5

Courtesy of Life Magazine

Note: The unification of sizes of bolt heads and nuts, as widely used threaded fasteners, was recently agreed on between American-British- and Canadian experts. Dimensional uniformity of these products will make it possible to use the same wrenches in each of the three countries. In line with this agreement, a revision of the American Standard Wrench Head Bolts and Nuts and Wrench Openings, B18.2-1941, is now nearing completion.

• • **The "helpful counsel and guidance"** of E. A. Holbrook was recognized by the Mining Standardization Correlating Committee on the occasion of his retirement from membership on the Committee. Mr Holbrook had been a member of the committee for more than 30 years, and served as chairman for 18 years. In a resolution adopted at its annual meeting recently, the MSCC declared that Mr Holbrook's chairmanship "was the single unifying factor in enabling the American Standards Association to institute and develop a program of standards for the mineral industries." For over 40 years Mr Holbrook was "a leader in research, technology, and education for the mineral industries, who always conducted his participation in these activities in the public interest," the resolution declares. Before his retirement, Mr Holbrook was successively Dean of the School of Mines, and Dean of the College of Engineering of the University of Pittsburgh.

• • **Quality control operations** at the gas turbine plant of Lincoln-Mercury are now under the direction of Henry Ford's grandson, William C. Ford: elected president of Edison Institute last April. Mr. Ford will work on the division's defense operations, specifically on the production of J-40 jet engines for the Navy.

• • **Ruth O'Brien,** assistant chief of the Bureau of Human Nutrition and Home Economics, has been given the Distinguished Service Award—top honor of the U.S. Department of Agriculture. The award particularly recognized Miss O'Brien's research to improve the fit of clothing, and provide a scientific basis for sizing women's and children's garments. Her studies proved that height and a girth measurement give a reliable clue to a child's size; whereas age, generally used in sizing children's clothing, was not a dependable guide. The National Bureau of Standards has used Miss O'Brien's findings in developing standard sizes for children's garments. Her studies were also used by ASA Sectional Committee L11 in developing a series of boys' body sizes, American Standard L11.1-1941.

• • **Officials of 11 Federal** agencies have agreed to abide by four nationally recognized standards of design and construction to conserve critical materials in new Government building projects, the Defense Production Administration has announced.

The standards were endorsed by a subcommittee of DPA's Conservation Coordinating Committee. James W. Follin, Director of Contract Settlement for the General Services Administration, is chairman of the subcommittee. Mr Follin is on loan to DPA.

The standards agreed on are:

Specifications for Design, Fabrication, and Erection of Structural Steel for Buildings (Riveted, Bolted and Arch-Welded Construction). American Institute of Steel Construction, 101 Park Avenue, New York.

National Design Specification for Stress-Grade Lumber and Its Fastenings, 1944; revised 1950. National Lumber Manufacturers Association, Washington, D. C.

Standard Building Code Requirements for Reinforced Concrete. This standard, prepared by the American Concrete Institute (ACI 318-'51), has just been approved as American Standard A89.1-1951. Copies can be obtained from ASA or from the American Concrete Institute, 18263 W. McNickols Road, Detroit 19, Michigan.

National Plumbing Code, June 1951. This code was developed by the National Plumbing Code Committee and issued jointly by the U.S. Department of Commerce and the Housing and Home Finance Agency as well as by the ASME. This is the proposed uniform code agreed upon by the Coordinating Committee for a National Plumbing Code, set up early in 1949. The American Society of Mechanical Engineers and the American Public Health Association, joint sponsors for the American Standard Plumbing Code, A40.7-1949, were both members of the Coordinating Committee. The proposed National Plumbing Code is now being processed by ASME for submittal to the American Standards Association for approval as American Standard. Prior to submittal a canvass of groups concerned is being made. Copies of the proposed code can be obtained from the ASME, 29 West 39 Street, New York 18, N. Y. The government's edition can be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, D. C., at 50 cents.

In identifying these standards as recognized good engineering practice, the subcommittee pointed out that technical societies and standardization groups are currently restudying these and other standards. It recommended that the Building Research Advisory Board consider the possibilities of revisions which would further improve construction practices and conserve critical materials.

Since load factors used in the design of a structure are fully as important to the conservation of materials as the working stresses of the materials which form the structure, the subcommittee recommended immediate study of design loads. Climatic conditions and location, as well as intended use and occupancy, will be fully considered in arriving at recommendations for standardizing and unifying design loads where this is practicable, DPA said. There now exists an American Standard on Minimum Design Loads in Buildings and Other Structures, A58.1-1945. The standard is under revision. The revising will be speeded up in an attempt to be of service to the DPA.

Government agencies represented on the subcommittee that recommended these four standards are: National Production Authority (Facilities and Construction Bureau); Department of the Army (Corps of Engineers); Defense Establishment (Munitions Board); Veterans Administration; GSA; Federal Security Agency; Housing and Home Financing Agency; National Bureau of Standards; and the National Academy of Sciences (Building Research Advisory Board).

• • **Insanitary drinking fountains** spread disease, warns Detroit's Bureau of Sanitary Engineering. In a brochure just published, the Bureau calls for correction of insanitary equipment to protect public health in Detroit. It reproduces American Standard Specifications for Drinking Fountains, Z4.2-1942, as a guide for those responsible for equipment in commercial, industrial, institutional, and public establishments.

Fountains from which the stream of water rises vertically rather than at an angle are almost always hazardous, and may spread contagious diseases such as streptococcus infections, trench mouth, and tuberculosis, the Bureau explains. The American Standard specifications call for an inclined jet of water and a guard to prevent the mouth and nose of persons using the fountain from coming into contact with the nozzle. The Detroit Plumbing Code contains requirements virtually identical with the American standard. Drinking fountains that meet the standard specifications, as well as adaptors to correct existing insanitary fountains, are marketed by many manufacturers, the Bureau points out.

• • **For a discussion** of "How to Produce More Holes with Your Drills," based on the use of drills covered in the American Standard, Twist Drills, Straight Shank and Taper Shank, B5.12-1950, see *Machinery*, May 1951. The article is by R. J. Sack, Oliver Instrument Company, Adrian, Michigan. Mr Sack analyzes some of the problems that arise in drilling and offers suggested remedies. He includes tables of suggested speeds, drill angles, and coolants for use in drilling various materials, as well as suggested feed ranges for drilling.

• • **The Federal Safety Council** held its organizational meeting April 18. Created by Presidential Executive Order the Council replaces the old Federal Interdepartmental Safety Council, and is charged with the obligation of advising the Secretary of Labor in developing and maintaining effective safety organizations and programs in Federal agencies.

William L. Connolly, Director of the Department of Labor's Bureau of Labor Standards, was designated Council Chairman.

Other officers are: Vice Chairman —Charles A. Peters, General Services Administration. Advisory Committee —T. Roy Reid, Department of Agriculture; F. C. Waller, Atomic Energy Commission; Colonel Will C. Tubbs, Department of the Air Force; James V. Bennett, Department of Justice; C. Spencer Platt, Bureau of the Budget; Roland H. Wooten, Government of D. C.; Gerald Ryan, Department of Commerce; Willard A. Anderson, Government Printing Office; Edgar B. Jackson, Post Office Department.

• • **Brushes for Electrical Machines**—The American Standard for Brushes for Electrical Machines, C64.1-1950, just published, contains definitions, dimensions and tolerances, and test procedures needed for the manufacture and use of these brushes.

A brush, as used in the electrical manufacturing industry, is a conductor, usually composed in part of some form of the element carbon. It serves to maintain an electrical connection between stationary and moving parts of a machine or apparatus.

Definitions are given for five types of brushes—carbon, carbon-graphite, electrographitic, graphite, and metal-graphite. Brushes are also classified and defined into three groups—fractional horsepower, industrial, and split brushes.

Diagrams illustrating various types of brushes, their corners, ends, edges, and shoulders are included. Shunt terminals for brushes to be used in reaction or box type holders are also illustrated in the standard.

An appendix at the back of the standard contains a spring design data form sheet.

This standard is a revision of American Standard Carbon, Graphite, and Metal-Graphite Brushes, C64-1935. The National Electrical Manufacturers Association undertook the sponsorship for the revision of the 1935 edition.

Copies of the American Standard for Brushes for Electrical Machines, C64.1-1950, are available at $1.50 each.

• • **Some 16 proposed tests** were brought back from Europe by delegates representing the American Association of Textile Chemists and Colorists and are being studied by AATCC committees in hope of reaching final agreement for world standardization. A report on their trip to Europe on AATCC's behalf was made by C. Norris Rabold, president of AATCC, and Leonard S. Little, chairman of the Executive Committee on Research, at the 177th Council Meeting of the Association, June 26. Mr Rabold and Mr Little attended both the Textile Institute Conference at Brighton and the meeting of the Textile Committee of the International Organization for Standardization, ISO TC/38, at Bournemouth, England. At the ISO Conference they were members of the U.S. delegation headed by Wm D. Appel, Chief of the Textile Section, National Bureau of Standards, with Cyril Ainsworth, American Standards Association, as secretary. Representatives of 15 countries were present.

ISO will meet in New York next June, with the American Standards Association acting as host. Mr Ra-

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• • **States that have** regular periodic motor vehicle inspection programs are far out in front in reducing the traffic accident fatality toll, the Association of Casualty and Surety Companies reports. According to National Safety Council figures the record shows the following comparison of death rates:

The American Standard Inspection Requirements for Motor Vehicles, D7.1-1941, were prepared by a sectional committee under the procedure of the American Standards Association as a standard guide for states in setting up their inspection procedures. The American Association of Motor Vehicle Administrators and the Accident Prevention Department of the Association of Casualty and Surety Companies are sponsors for this project.

	Average Death Rates Per 100 Million Vehicle Miles		*Percentage That 1950 Average Death Rates Are Above or Below National Average*
	1949	*1950*	
National Average	7.4	7.5	....
States Not Requiring Inspection	7.5	7.8	+ 4.0%
States Requiring Inspection:			
All States	6.2	6.4	—14.7%
States Having Private Inspection Stations Appointed by the State	6.7	6.9	— 8.0%
States Having State-Owned and Operated Inspection Stations	4.8	4.6	—38.7%

bold and Mr Little expressed the hope of AATCC that it will be able to return some of the favors and honors paid to them by British and Continental friends of AATCC.

In addition to the ISO meetings, Messrs Rabold and Little met with the Society of Dyers and Colorists in Manchester on the Color Index, which is jointly edited by the Society and the AATCC. They also visited in Belgium, Holland, France, and Switzerland, and continued discussions already started with the Swiss committee on color fastness.

In Europe, they found, most tests have been set up to simulate hand rubbing and washing, rather than the mechanical laundry machine simulation used in the U.S. This is undoubtedly due to the smaller percentage of home mechanical and commercial laundry machines in use on the Continent. Sunfastness in England is based on actual roof exposure. In many cases it takes a year to get accurate final light fastness of a dyestuff or fabric by this method, whereas the carbon arc machine in use in the U.S. produces standard tests in a matter of days. For the most part, these machine tests can be correlated with actual sun exposure, according to the AATCC.

• • **Air Force Packaging Nears Standardization**—A project which is providing the Air Force with supplies packaged in standard unit quantities, and in containers of standard size, shape, and type is near completion. The Supply Division, Air Materiel Command, is carrying out the project with the cooperation of industry.

Previously, a supply item shipped by several manufacturers was received in different types of containers of various sizes, shapes, and weights.

Now, data is being compiled on an Air Force standard unit package defined as the basic package containing a single item or multiples of this item, and including the method of packaging required for preservation of that item. A standard unit package must be of specified cubage, dimension, and weight. There will be a separate *USAF Unit Package, Weight, and Cubage Data* catalog for each class of Air Force Supply items, except those exempted. Lumber, sheet metal, training film, and printing forms are among the exempted items.

More efficient receiving, storing, and issuing operations at Air Force depots throughout the United States are expected from use of the new standard package system. It is speeding the taking of inventories, and helping to economize storage space, the Air Materiel Command announces.

Book Reviews

Plant Layout, Planning and Practice. By Randolph W. Mallick and Armand T. Gaudreau. (John Wiley & Sons, Inc., 440 Fourth Avenue, New York 16, $7.50)

Written primarily for the administrative executive and plant engineer, this book is also a quick guide for senior and junior engineers and a reference for engineering colleges. The authors have centered their attention on salient aspects of layout problems encountered in more than 25 years of actual experience in scores of manufacturing plants throughout this country. Divided into four parts, the first, Approach to Plant Layout and second, Planning the Processing Departments, are broken down into six chapters. The third, Designing Plant Service Facilities, is made up of seven chapters while the fourth, Justifying the Layout Project, contains three.

ASTM Standards on Metallic Electrical Conductors (American Society for Testing Materials, 1916 Race Street, Philadelphia 3 Pa. $2.50)

This is the first edition of a compilation of 43 ASTM standards, tentative specifications, and methods of test on metallic electrical conductors sponsored by Committee B-1 on Wires for Electrical Conductors.

Included are specifications and test methods covering: (1) copper, copper alloy and copper-covered steel wire; stranded conductors; rods, bars, and shapes; pipes and tubes; (2) aluminum wire; stranded conductors; rods and bars; (3) galvanized steel core wire; and galvanized iron and steel guy, messenger, span, overhead ground, and line wire.

Other specifications cover nonferrous metals: lake copper and electrolytic copper wire bars, cakes, slabs, billets, ingots; slab zinc (spelter); pig lead; and oxygen-free electrolytic copper wire bars, billets, and cakes.

ASTM Standards on Gaseous Fuels (American Society for Testing Materials, 1916 Race Street, Philadelphia 3, Pa. $1.75)

The second edition of this compilation, prepared by ASTM Committee D-3 on Gaseous Fuels, includes the seven ASTM standards in this field. Contents cover Sampling and Measurement, and Methods of Testing and Analysis.

Four new methods are included in this edition: Analysis of Natural Gases by the Volumetric-Chemical Methods (D 1136); Analysis of Natural Gases and Related Types of Gaseous Mixtures by the Mass Spectrometer (D 1137); Water Vapor Content of Gaseous Fuels by Measurement of Dew-Point Temperature (D 1142); Sampling Natural Gas (D 1145).

Methods included in the earlier edition as well as in this edition are: Calorific Values of Gaseous Fuels by the Water-Flow Calorimeter (D 900); Specific Gravity of Gaseous Fuels (D 1070); and Measurement of Gaseous Fuel Samples (D 1071).

ASTM Manual on Quality Control of Materials (STP No. 15-C). (American Society for Testing Materials, 1916 Race Street, Philadelphia 3, Pa. $1.75)

Sponsored by ASTM Committee E-11 on Quality Control of Materials, the recently published Manual takes the place of the earlier ASTM Manual on Presentation of Data. Part 1 of the new edition covers presentation of data; Part 2 presents limits of uncertainty of an observed average; Part 3 explains the control chart method of analysis and methods for presentation of data.

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Purchasing and Standards is the topic to be presented by the Committee of Standardization of the National Association of Purchasing Agents

October 23rd

Materials Conservation Forum, is sponsored by MODERN INDUSTRY and conducted by Eldridge Haynes, President and Publisher as Moderator

October 24th

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